# UNITED STATES NAVAL OBSERVATORY

## CIRCULAR NO. 130

U. S. Naval Observatory, Washington, D. C. 20390 April 19, 1971

# PERIGEE AND APOGEE OF THE MOON

## 1959 – 1999

by

Berenice L. Morrison

This *Circular* contains the Ephemeris Times for : perigee and apogee of the moon, the time that the center of the moon is on the celestial equator, the time of maximum position north and south of the celestial equator with the apparent declination at the extreme time. These data have been interpolated from the lunar ephemeris which is printed annually in the *American Ephemeris and Nautical Almanac*.

YEAR = 1959

| PERIGEE | APOGEE | ZERO DEC. | EXTREME DEC. | APP. DEC. |
|---|---|---|---|---|
| M D H | M D H | M D H | M D H | ° ' '' |
| | | 1 01 07.51 | | |
| 1 05 20.65 | | 1 14 08.93 | 1 07 15.27 | -18 44 09.1 |
| | 1 17 17.06 | 1 28 14.33 | 1 21 20.74 | 18 40 09.8 |
| 1 31 05.46 | | 2 10 18.87 | 2 03 23.75 | -18 35 10.2 |
| | 2 14 14.36 | 2 24 22.67 | 2 18 06.55 | 18 28 56.6 |
| 2 26 09.53 | | 3 10 03.17 | 3 03 05.72 | -18 24 29.9 |
| | 3 14 09.41 | 3 24 08.79 | 3 17 15.31 | 18 20 27.5 |
| 3 26 09.50 | | 4 06 09.67 | 3 30 11.66 | -18 19 11.7 |
| | 4 10 22.90 | 4 20 19.63 | 4 13 22.64 | 18 19 48.2 |
| 4 23 18.37 | | 5 03 15.59 | 4 26 19.74 | -18 21 32.6 |
| | 5 08 03.63 | 5 18 05.75 | 5 11 05.24 | 18 25 15.5 |
| 5 22 04.89 | | 5 30 22.48 | 5 24 06.34 | -18 27 30.5 |
| | 6 04 07.60 | 6 14 14.24 | 6 07 12.13 | 18 30 33.4 |
| 6 19 13.18 | | 6 27 07.10 | 6 20 18.02 | -18 30 35.6 |
| | 7 01 19.22 | 7 11 21.20 | 7 04 19.83 | 18 30 14.4 |
| 7 17 14.24 | | 7 24 16.93 | 7 18 04.77 | -18 27 10.8 |
| | 7 29 11.77 | 8 08 03.69 | 8 01 04.35 | 18 23 30.9 |
| 8 13 16.01 | | 8 21 02.70 | 8 14 13.14 | -18 19 00.6 |
| | 8 26 06.23 | 9 04 11.10 | 8 28 13.15 | 18 14 41.3 |
| 9 07 16.64 | | 9 17 11.26 | 9 10 19.14 | -18 11 43.3 |
| | 9 23 01.48 | 10 01 20.33 | 9 24 21.57 | 18 10 09.7 |
| 10 04 21.28 | | 10 14 18.28 | 10 08 00.83 | -18 10 40.3 |
| | 10 20 19.25 | 10 29 07.03 | 10 22 05.29 | 18 13 23.7 |
| 11 02 01.22 | | 11 11 00.50 | 11 04 08.63 | -18 16 33.3 |
| | 11 17 06.57 | 11 25 17.78 | 11 18 12.62 | 18 21 29.6 |
| 11 30 12.54 | | 12 08 07.52 | 12 01 19.62 | -18 24 07.4 |
| | 12 14 06.99 | 12 23 02.93 | 12 15 20.04 | 18 27 08.5 |
| 12 29 01.25 | | | 12 29 08.31 | -18 26 19.0 |

YEAR = 1960

| PERIGEE | APOGEE | ZERO DEC. | EXTREME DEC. | APP. DEC. |
|---|---|---|---|---|
| M D H | M D H | M D H | M D H | ° ' '' |
| | | 1 04 16.43 | | |
| | 1 10 13.26 | 1 19 10.06 | 1 12 03.94 | 18 25 07.8 |
| 1 26 09.89 | | 2 01 02.87 | 1 25 19.79 | -18 21 06.4 |
| | 2 07 05.85 | 2 15 16.47 | 2 08 12.24 | 18 17 26.4 |
| 2 23 02.87 | | 2 28 13.25 | 2 22 04.09 | -18 13 40.8 |
| | 3 06 02.18 | 3 13 23.90 | 3 06 20.62 | 18 11 29.2 |
| 3 19 07.33 | | 3 26 22.12 | 3 20 09.84 | -18 11 13.4 |
| | 4 02 22.31 | 4 10 09.18 | 4 03 04.89 | 18 13 03.6 |
| 4 14 18.80 | | 4 23 05.22 | 4 16 15.71 | -18 16 19.2 |
| | 4 30 15.94 | 5 07 19.60 | 4 30 12.96 | 18 21 14.5 |
| 5 12 18.18 | | 5 20 11.53 | 5 14 00.05 | -18 25 16.5 |
| | 5 28 04.49 | 6 04 05.80 | 5 27 20.70 | 18 29 57.1 |
| 6 10 01.83 | | 6 16 18.57 | 6 10 10.93 | -18 31 41.7 |
| | 6 24 09.48 | 7 01 14.52 | 6 24 04.14 | 18 33 21.8 |
| 7 08 11.45 | | 7 14 03.10 | 7 07 22.82 | -18 31 41.5 |
| | 7 21 13.59 | 7 28 21.42 | 7 21 11.39 | 18 30 11.1 |
| 8 05 19.62 | | 8 10 12.94 | 8 04 09.59 | -18 26 42.2 |
| | 8 18 00.92 | 8 25 03.40 | 8 17 18.64 | 18 24 19.8 |
| 9 02 21.38 | | 9 06 23.12 | 8 31 17.78 | -18 22 19.8 |
| | 9 14 17.66 | 9 21 10.06 | 9 14 02.28 | 18 22 08.6 |
| 9 29 22.30 | | 10 04 08.48 | 9 27 23.73 | -18 24 02.4 |
| | 10 12 13.22 | 10 18 18.65 | 10 11 10.48 | 18 27 35.6 |
| 10 24 19.61 | | 10 31 16.32 | 10 25 05.41 | -18 32 43.3 |
| | 11 09 09.50 | 11 15 05.01 | 11 07 19.13 | 18 38 34.4 |
| 11 21 04.27 | | 11 27 23.02 | 11 21 13.54 | -18 43 29.8 |
| | 12 07 03.43 | 12 12 15.58 | 12 05 03.75 | 18 48 03.3 |
| 12 19 10.64 | | 12 25 06.02 | 12 19 00.73 | -18 49 24.1 |

# MOON

YEAR = 1961

| PERIGEE | APOGEE | ZERO DEC. | EXTREME DEC. | APP. DEC. |
|---|---|---|---|---|
| M D H | M D H | M D H | M D H | ° ' '' |
| | | | 1 01 11.71 | 18 50 11.6 |
| | 1 03 12.96 | 1 09 00.53 | 1 15 13.22 | -18 47 47.3 |
| 1 16 23.03 | | 1 21 14.64 | 1 28 18.78 | 18 45 58.9 |
| | 1 30 12.57 | 2 05 07.32 | 2 12 00.20 | -18 43 20.0 |
| 2 14 11.55 | | 2 18 00.95 | 2 25 01.58 | 18 42 29.3 |
| | 2 26 21.15 | 3 04 13.15 | 3 11 08.06 | -18 43 31.5 |
| 3 14 18.33 | | 3 17 11.65 | 3 24 09.00 | 18 46 07.4 |
| | 3 26 14.51 | 3 31 19.91 | 4 07 13.79 | -18 51 21.7 |
| 4 11 07.59 | | 4 13 21.25 | 4 20 17.50 | 18 56 48.6 |
| | 4 23 10.09 | 4 28 04.44 | 5 04 19.84 | -19 03 13.4 |
| 5 06 12.13 | | 5 11 05.07 | 5 18 02.63 | 19 08 39.9 |
| | 5 21 05.18 | 5 25 14.24 | 6 01 04.08 | -19 12 41.3 |
| 6 02 02.72 | | 6 07 11.65 | 6 14 11.35 | 19 15 29.6 |
| | 6 17 22.25 | 6 21 23.96 | 6 28 14.55 | -19 15 41.6 |
| 6 30 01.35 | | 7 04 18.37 | 7 11 18.89 | 19 15 30.0 |
| | 7 15 11.24 | 7 19 08.29 | 7 26 01.81 | -19 13 25.3 |
| 7 28 08.67 | | 8 01 02.31 | 8 08 01.31 | 19 12 15.5 |
| | 8 11 16.82 | 8 15 14.80 | 8 22 12.04 | -19 11 25.2 |
| 8 25 18.76 | | 8 28 11.88 | 9 04 07.36 | 19 12 04.4 |
| | 9 07 20.44 | 9 11 20.38 | 9 18 19.97 | -19 15 25.3 |
| 9 23 04.08 | | 9 24 22.47 | 10 01 14.35 | 19 19 19.6 |
| | 10 05 07.90 | 10 09 02.64 | 10 16 01.97 | -19 26 35.2 |
| 10 21 06.94 | | 10 22 08.73 | 10 28 23.04 | 19 32 37.2 |
| | 11 02 01.71 | 11 05 10.72 | 11 12 07.94 | -19 40 08.6 |
| 11 17 05.41 | | 11 18 17.38 | 11 25 08.97 | 19 45 15.3 |
| | 11 29 22.53 | 12 02 20.40 | 12 09 16.01 | -19 49 06.1 |
| 12 12 00.54 | | 12 16 00.20 | 12 22 18.58 | 19 50 53.7 |
| | 12 27 19.45 | 12 30 06.15 | | |

YEAR = 1962

| PERIGEE | APOGEE | ZERO DEC. | EXTREME DEC. | APP. DEC. |
|---|---|---|---|---|
| M D H | M D H | M D H | M D H | ° ' '' |
| | | | 1 06 02.57 | -19 50 24.4 |
| 1 08 13.90 | | 1 12 06.67 | 1 19 02.46 | 19 49 38.4 |
| | 1 24 12.93 | 1 26 14.38 | 2 02 13.92 | -19 48 14.5 |
| 2 05 21.73 | | 2 08 14.62 | 2 15 08.47 | 19 48 10.4 |
| | 2 20 20.84 | 2 22 20.79 | 3 01 23.84 | -19 50 19.5 |
| 3 06 09.96 | | 3 08 00.65 | 3 14 14.21 | 19 53 21.3 |
| | 3 19 21.43 | 3 22 02.50 | 3 29 07.30 | -20 00 16.1 |
| 4 03 20.95 | | 4 04 11.65 | 4 10 21.50 | 20 05 53.2 |
| | 4 16 06.82 | 4 18 08.96 | 4 25 13.28 | -20 14 32.7 |
| 5 02 01.78 | | 5 01 21.88 | 5 08 06.77 | 20 20 10.0 |
| | 5 13 23.28 | 5 15 16.85 | 5 22 19.52 | -20 26 26.3 |
| 5 29 13.06 | | 5 29 06.16 | 6 04 16.89 | 20 29 38.7 |
| | 6 10 17.68 | 6 12 01.74 | 6 19 03.35 | -20 31 40.6 |
| 6 23 19.60 | | 6 25 12.62 | 7 02 02.19 | 20 32 04.4 |
| | 7 08 12.24 | 7 09 10.57 | 7 16 12.78 | -20 31 19.5 |
| 7 20 10.14 | | 7 22 18.66 | 7 29 09.54 | 20 30 47.4 |
| | 8 05 05.72 | 8 05 18.31 | 8 12 22.79 | -20 30 52.2 |
| 8 17 08.46 | | 8 19 01.88 | 8 25 15.15 | 20 32 02.9 |
| | 9 01 19.36 | 9 02 00.69 | 9 09 08.07 | -20 36 14.0 |
| 9 14 16.28 | | 9 15 11.24 | 9 21 20.54 | 20 40 25.3 |
| | 9 29 00.68 | 9 29 06.46 | 10 06 15.72 | -20 48 57.1 |
| 10 13 03.45 | | 10 12 22.27 | 10 19 03.66 | 20 55 02.5 |
| | 10 26 03.46 | 10 26 12.73 | 11 02 21.98 | -21 04 25.5 |
| 11 10 13.84 | | 11 09 09.21 | 11 15 13.35 | 21 09 39.2 |
| | 11 22 15.74 | 11 22 20.30 | 11 30 04.20 | -21 15 29.2 |
| 12 08 16.63 | | 12 06 18.16 | 12 13 00.41 | 21 17 38.6 |
| | 12 20 10.76 | 12 20 04.94 | 12 27 11.86 | -21 18 42.3 |

# MOON

YEAR = 1963

| PERIGEE<br>M D H | APOGEE<br>M D H | ZERO DEC.<br>M D H | EXTREME DEC.<br>M D H | APP. DEC.<br>° ' '' |
|---|---|---|---|---|
| 1 04 08.33 | 1 17 08.10 | 1 03 00.57 | | |
| 1 29 07.47 | 2 14 04.36 | 1 16 13.65 | 1 09 10.49 | 21 18 24.4 |
| 2 26 00.32 | 3 13 19.97 | 1 30 06.26 | 1 23 21.05 | -21 17 52.8 |
| 3 26 07.84 | 4 10 02.54 | 2 12 21.50 | 2 05 17.88 | 21 18 16.5 |
| 4 23 18.60 | 5 07 04.30 | 2 26 13.60 | 2 20 06.68 | -21 20 48.9 |
| 5 22 04.03 | 6 03 13.97 | 3 12 04.25 | 3 04 23.21 | 21 24 20.0 |
| 6 19 07.65 | 7 01 05.55 | 3 25 23.45 | 3 19 15.44 | -21 31 43.7 |
| 7 16 18.35 | 7 28 23.68 | 4 08 10.41 | 4 01 04.70 | 21 37 45.5 |
| 8 11 00.39 | 8 25 18.43 | 4 22 10.60 | 4 15 22.75 | -21 47 23.5 |
| 9 06 15.60 | 9 22 12.62 | 5 05 16.82 | 4 28 12.49 | 21 53 15.4 |
| 10 04 15.12 | 10 20 02.46 | 5 19 20.99 | 5 13 05.06 | -22 00 46.5 |
| 11 02 00.56 | 11 16 06.28 | 6 01 23.96 | 5 25 22.52 | 22 04 08.5 |
| 11 30 13.20 | 12 13 09.38 | 6 16 05.17 | 6 09 11.39 | -22 07 15.8 |
| 12 29 00.21 | | 6 29 07.85 | 6 22 09.19 | 22 07 51.3 |
| | | 7 13 11.12 | 7 06 18.41 | -22 07 50.0 |
| | | 7 26 15.95 | 7 19 18.58 | 22 07 35.9 |
| | | 8 09 16.46 | 8 03 02.42 | -22 07 57.9 |
| | | 8 22 23.66 | 8 16 01.73 | 22 09 36.2 |
| | | 9 05 23.19 | 8 30 10.98 | -22 13 37.9 |
| | | 9 19 06.75 | 9 12 06.97 | 22 18 23.5 |
| | | 10 03 08.54 | 9 26 19.35 | -22 26 39.1 |
| | | 10 16 13.25 | 10 09 12.40 | 22 33 13.8 |
| | | 10 30 19.77 | 10 24 02.89 | -22 42 45.4 |
| | | 11 12 19.63 | 11 05 20.07 | 22 48 17.0 |
| | | 11 27 06.70 | 11 20 09.49 | -22 54 44.1 |
| | | 12 10 02.43 | 12 03 06.53 | 22 57 04.7 |
| | | 12 24 15.11 | 12 17 15.78 | -22 58 45.0 |
| | | | 12 30 18.07 | 22 58 36.5 |

YEAR = 1964

| PERIGEE<br>M D H | APOGEE<br>M D H | ZERO DEC.<br>M D H | EXTREME DEC.<br>M D H | APP. DEC.<br>° ' '' |
|---|---|---|---|---|
| 1 26 01.44 | 1 09 23.70 | 1 06 10.05 | | |
| 2 21 07.94 | 2 06 19.76 | 1 20 20.74 | 1 13 22.54 | -22 58 14.0 |
| 3 17 15.59 | 3 05 16.82 | 2 02 18.41 | 1 27 04.12 | 22 58 55.2 |
| 4 14 09.69 | 4 02 11.95 | 2 17 01.83 | 2 10 06.03 | -23 01 00.7 |
| 5 12 16.32 | 4 30 02.35 | 3 01 02.86 | 2 23 11.20 | 23 05 12.3 |
| 6 10 02.08 | 5 27 08.97 | 3 15 08.94 | 3 08 14.12 | -23 11 45.8 |
| 7 08 11.02 | 6 23 11.57 | 3 28 10.65 | 3 21 16.33 | 23 18 42.9 |
| 8 05 14.91 | 7 20 20.82 | 4 11 18.61 | 4 04 22.15 | -23 27 38.0 |
| 9 02 02.34 | 8 17 12.27 | 4 24 17.48 | 4 17 22.14 | 23 34 12.2 |
| 9 27 04.69 | 9 14 06.79 | 5 09 05.37 | 5 02 05.61 | -23 41 26.0 |
| 10 23 21.98 | 10 12 02.75 | 5 21 23.65 | 5 15 06.25 | 23 45 05.1 |
| 11 20 23.94 | 11 08 22.03 | 6 05 15.17 | 5 29 12.34 | -23 48 12.0 |
| 12 19 11.27 | 12 06 11.89 | 6 18 06.00 | 6 11 16.51 | 23 48 49.0 |
| | | 7 02 22.63 | 6 25 18.43 | -23 48 46.7 |
| | | 7 15 13.11 | 7 09 03.20 | 23 48 36.3 |
| | | 7 30 03.97 | 7 23 00.53 | -23 48 40.3 |
| | | 8 11 21.22 | 8 05 12.53 | 23 50 40.9 |
| | | 8 26 08.91 | 8 19 07.11 | -23 53 52.0 |
| | | 9 08 05.87 | 9 01 19.52 | 23 59 24.7 |
| | | 9 22 15.57 | 9 15 14.53 | -24 06 17.1 |
| | | 10 05 14.20 | 9 29 00.90 | 24 13 48.5 |
| | | 10 20 00.79 | 10 12 22.51 | -24 21 56.7 |
| | | 11 01 21.47 | 10 26 06.55 | 24 28 07.8 |
| | | 11 16 11.55 | 11 09 06.34 | -24 33 46.3 |
| | | 11 29 03.58 | 11 22 14.67 | 24 36 18.9 |
| | | 12 13 21.49 | 12 06 13.41 | -24 37 40.1 |
| | | 12 26 09.50 | 12 20 01.32 | 24 37 25.9 |

# MOON

YEAR = 1965

| PERIGEE | APOGEE | ZERO DEC. | EXTREME DEC. | APP. DEC. |
|---|---|---|---|---|
| M D H | M D H | M D H | M D H | ° ' '' |
| | 1 02 14.11 | 1 10 04.73 | 1 02 19.48 | -24 36 41.7 |
| 1 17 00.59 | | 1 22 16.71 | 1 16 12.64 | 24 37 22.2 |
| | 1 29 18.43 | 2 06 09.68 | 1 30 01.17 | -24 38 38.8 |
| 2 14 10.74 | | 2 19 01.69 | 2 12 22.24 | 24 43 22.6 |
| | 2 26 09.89 | 3 05 14.76 | 2 26 07.33 | -24 48 34.1 |
| 3 14 09.10 | | 3 18 11.43 | 3 12 05.08 | 24 56 36.5 |
| | 3 26 05.54 | 4 01 21.84 | 3 25 14.65 | -25 03 54.2 |
| 4 09 10.75 | | 4 14 20.34 | 4 08 10.47 | 25 11 27.8 |
| | 4 23 01.47 | 4 29 06.95 | 4 21 22.82 | -25 17 21.4 |
| 5 05 01.14 | | 5 12 03.45 | 5 05 16.48 | 25 21 21.9 |
| | 5 20 19.54 | 5 26 16.64 | 5 19 06.86 | -25 23 40.6 |
| 6 01 18.45 | | 6 08 09.13 | 6 02 00.59 | 25 24 06.9 |
| | 6 17 09.96 | 6 23 01.19 | 6 15 13.92 | -25 23 37.2 |
| 6 30 00.14 | | 7 05 14.74 | 6 29 10.40 | 25 23 09.5 |
| | 7 14 17.22 | 7 20 07.72 | 7 12 19.72 | -25 22 45.7 |
| 7 28 09.42 | | 8 01 21.71 | 7 26 20.58 | 25 24 45.7 |
| | 8 10 19.67 | 8 16 12.71 | 8 09 00.98 | -25 27 05.7 |
| 8 25 18.56 | | 8 29 06.58 | 8 23 05.59 | 25 33 06.1 |
| | 9 07 04.09 | 9 12 17.85 | 9 05 06.71 | -25 38 31.3 |
| 9 22 23.42 | | 9 25 16.57 | 9 19 12.69 | 25 46 49.7 |
| | 10 04 19.66 | 10 10 00.62 | 10 02 13.86 | -25 53 11.4 |
| 10 20 10.98 | | 10 23 02.04 | 10 16 18.19 | 25 59 57.9 |
| | 11 01 15.14 | 11 06 09.34 | 10 29 22.28 | -26 04 10.7 |
| 11 14 07.61 | | 11 19 09.52 | 11 13 00.14 | 26 06 42.9 |
| | 11 29 12.04 | 12 03 18.76 | 11 26 06.89 | -26 07 17.6 |
| 12 11 06.00 | | 12 16 14.97 | 12 10 08.06 | 26 06 32.7 |
| | 12 27 07.26 | 12 31 03.01 | 12 23 14.41 | -26 05 19.9 |

YEAR = 1966

| PERIGEE | APOGEE | ZERO DEC. | EXTREME DEC. | APP. DEC. |
|---|---|---|---|---|
| M D H | M D H | M D H | M D H | ° ' '' |
| | | | 1 06 18.10 | 26 05 24.2 |
| 1 08 10.44 | | 1 12 20.34 | 1 19 20.19 | -26 06 02.6 |
| | 1 23 19.43 | 1 27 09.24 | 2 03 04.68 | 26 10 33.4 |
| 2 05 22.21 | | 2 09 03.90 | 2 16 01.14 | -26 14 43.0 |
| | 2 19 20.64 | 2 23 14.34 | 3 02 13.75 | 26 23 08.3 |
| 3 06 10.63 | | 3 08 13.97 | 3 15 06.91 | -26 29 02.0 |
| | 3 19 02.83 | 3 22 19.92 | 3 29 20.54 | 26 37 06.4 |
| 4 03 18.76 | | 4 05 00.79 | 4 11 14.58 | -26 41 35.9 |
| | 4 15 18.32 | 4 19 02.86 | 4 26 02.07 | 26 45 35.4 |
| 5 01 14.34 | | 5 02 10.18 | 5 08 23.54 | -26 46 53.8 |
| | 5 13 13.00 | 5 16 10.87 | 5 23 08.02 | 26 46 42.4 |
| 5 27 14.06 | | 5 29 17.07 | 6 05 08.29 | -26 45 39.5 |
| | 6 10 07.84 | 6 12 19.00 | 6 19 15.53 | 26 44 21.0 |
| 6 22 08.47 | | 6 25 22.14 | 7 02 15.63 | -26 43 36.8 |
| | 7 08 01.44 | 7 10 02.29 | 7 17 00.52 | 26 44 52.8 |
| 7 20 01.22 | | 7 23 03.41 | 7 29 21.30 | -26 46 45.3 |
| | 8 04 15.86 | 8 06 08.45 | 8 13 09.98 | 26 52 16.6 |
| 8 17 06.62 | | 8 19 10.73 | 8 26 02.22 | -26 56 50.9 |
| | 8 31 23.25 | 9 02 13.97 | 9 09 18.62 | 27 04 55.0 |
| 9 14 16.54 | | 9 15 20.57 | 9 22 07.94 | -27 10 02.5 |
| | 9 28 00.94 | 9 29 19.76 | 10 07 01.64 | 27 16 35.8 |
| 10 13 02.95 | | 10 13 07.57 | 10 19 15.62 | -27 19 35.0 |
| | 10 25 09.95 | 10 27 02.43 | 11 03 07.25 | 27 21 31.8 |
| 11 10 08.70 | | 11 09 17.44 | 11 16 01.01 | -27 21 18.2 |
| | 11 22 03.03 | 11 23 09.95 | 11 30 13.05 | 27 19 28.7 |
| 12 07 17.87 | | 12 07 00.44 | 12 13 10.51 | -27 17 50.1 |
| | 12 19 23.82 | 12 20 17.64 | 12 27 20.41 | 27 16 34.1 |

# MOON

YEAR = 1967

| PERIGEE M D H | APOGEE M D H | ZERO DEC. M D H | EXTREME DEC. M D H | APP. DEC. ° ' " |
|---|---|---|---|---|
| 1 01 09.80 | | 1 03 05.24 | 1 09 18.32 | -27 16 52.6 |
| | 1 16 21.08 | 1 17 00.81 | 1 24 05.45 | 27 20 05.3 |
| 1 28 15.09 | | 1 30 10.57 | 2 06 00.06 | -27 23 49.5 |
| | 2 13 15.19 | 2 13 07.35 | 2 20 14.98 | 27 31 14.5 |
| 2 25 20.73 | | 2 26 18.84 | 3 05 04.93 | -27 36 27.6 |
| | 3 13 01.45 | 3 12 13.49 | 3 19 23.40 | 27 43 49.6 |
| 3 26 08.00 | | 3 26 05.64 | 4 01 11.16 | -27 47 23.9 |
| | 4 09 03.15 | 4 08 19.61 | 4 16 06.01 | 27 50 35.7 |
| 4 23 19.05 | | 4 22 16.71 | 4 28 19.52 | -27 51 02.1 |
| | 5 06 10.69 | 5 06 01.91 | 5 13 11.56 | 27 49 42.4 |
| 5 22 01.74 | | 5 20 01.78 | 5 26 05.19 | -27 48 05.4 |
| | 6 03 01.85 | 6 02 08.55 | 6 09 17.13 | 27 45 26.5 |
| 6 18 20.21 | | 6 16 08.07 | 6 22 14.53 | -27 44 26.7 |
| | 6 30 19.76 | 6 29 15.49 | 7 06 23.86 | 27 44 18.8 |
| 7 14 19.92 | | 7 13 12.69 | 7 19 22.19 | -27 46 04.3 |
| | 7 28 14.46 | 7 26 22.58 | 8 03 07.82 | 27 50 06.5 |
| 8 09 14.58 | | 8 09 18.05 | 8 16 04.00 | -27 54 26.9 |
| | 8 25 08.68 | 8 23 05.62 | 8 30 16.48 | 28 01 01.4 |
| 9 06 07.65 | | 9 06 01.88 | 9 12 09.10 | -28 05 34.9 |
| | 9 22 00.16 | 9 19 12.34 | 9 27 00.70 | 28 10 49.5 |
| 10 04 14.37 | | 10 03 12.24 | 10 09 15.22 | -28 12 58.5 |
| | 10 19 07.43 | 10 16 18.66 | 10 24 07.50 | 28 13 44.5 |
| 11 02 01.90 | | 10 30 23.34 | 11 05 23.59 | -28 12 43.5 |
| | 11 15 08.15 | 11 13 00.64 | 11 20 13.08 | 28 09 34.3 |
| 11 30 13.58 | | 11 27 08.66 | 12 03 09.74 | -28 07 23.5 |
| | 12 12 18.36 | 12 10 06.79 | 12 17 18.50 | 28 04 30.0 |
| 12 28 19.27 | | 12 24 14.83 | 12 30 19.82 | -28 04 32.5 |

YEAR = 1968

| PERIGEE M D H | APOGEE M D H | ZERO DEC. M D H | EXTREME DEC. M D H | APP. DEC. ° ' " |
|---|---|---|---|---|
| | | 1 06 13.70 | | |
| | 1 09 12.85 | 1 20 19.29 | 1 14 01.11 | 28 05 50.8 |
| 1 24 23.65 | | 2 02 21.53 | 1 27 03.97 | -28 09 31.6 |
| | 2 06 10.06 | 2 17 01.06 | 2 10 09.06 | 28 14 55.5 |
| 2 18 16.41 | | 3 01 05.60 | 2 23 09.87 | -28 20 00.3 |
| | 3 05 06.49 | 3 15 09.77 | 3 08 17.56 | 28 25 34.8 |
| 3 17 01.64 | | 3 28 12.88 | 3 21 15.06 | -28 28 36.2 |
| | 4 01 23.48 | 4 11 20.42 | 4 05 01.47 | 28 30 23.4 |
| 4 14 06.85 | | 4 24 18.98 | 4 17 21.70 | -28 29 57.8 |
| | 4 29 09.13 | 5 09 06.73 | 5 02 08.00 | 28 27 24.3 |
| 5 12 16.83 | | 5 22 00.34 | 5 15 06.40 | -28 24 59.8 |
| | 5 26 11.77 | 6 05 14.84 | 5 29 13.43 | 28 21 05.9 |
| 6 10 02.66 | | 6 18 06.10 | 6 11 16.41 | -28 19 38.9 |
| | 6 22 19.09 | 7 02 20.48 | 6 25 18.60 | 28 18 06.6 |
| 7 08 08.62 | | 7 15 13.07 | 7 09 02.09 | -28 19 45.2 |
| | 7 20 09.21 | 7 30 01.06 | 7 23 00.59 | 28 22 04.0 |
| 8 05 03.25 | | 8 11 21.33 | 8 05 10.11 | -28 26 23.7 |
| | 8 17 02.81 | 8 26 06.79 | 8 19 07.75 | 28 30 57.8 |
| 8 31 02.37 | | 9 08 05.98 | 9 01 16.23 | -28 35 14.8 |
| | 9 13 22.00 | 9 22 14.91 | 9 15 15.77 | 28 38 38.5 |
| 9 25 20.43 | | 10 05 13.79 | 9 28 21.56 | -28 40 01.8 |
| | 10 11 17.07 | 10 20 00.98 | 10 12 23.67 | 28 39 29.1 |
| 10 23 15.33 | | 11 01 20.01 | 10 26 03.89 | -28 37 24.1 |
| | 11 08 08.98 | 11 16 11.08 | 11 09 06.45 | 28 33 16.8 |
| 11 20 23.81 | | 11 29 01.04 | 11 22 12.59 | -28 30 07.3 |
| | 12 05 14.82 | 12 13 19.10 | 12 06 12.08 | 28 26 06.0 |
| 12 19 12.47 | | 12 26 06.66 | 12 19 23.09 | -28 25 30.8 |

YEAR = 1969

| PERIGEE<br>M D H | APOGEE<br>M D H | ZERO DEC.<br>M D H | EXTREME DEC.<br>M D H | APP. DEC.<br>° ' '' |
|---|---|---|---|---|
| | 1 01 15.20 | 1 10 00.54 | 1 02 17.26 | 28 25 15.1 |
| 1 17 00.15 | | 1 22 14.38 | 1 16 09.44 | -28 28 42.7 |
| | 1 29 03.21 | 2 06 05.32 | 1 29 23.21 | 28 32 09.4 |
| 2 14 03.85 | | 2 18 23.96 | 2 12 17.72 | -28 37 06.7 |
| | 2 25 22.15 | 3 05 11.65 | 2 26 06.37 | 28 40 45.2 |
| 3 13 01.68 | | 3 18 09.55 | 3 11 23.83 | -28 43 10.5 |
| | 3 25 18.51 | 4 01 20.18 | 3 25 14.42 | 28 43 32.0 |
| 4 07 00.11 | | 4 14 17.32 | 4 08 05.15 | -28 41 53.5 |
| | 4 22 13.66 | 4 29 05.69 | 4 21 22.25 | 28 38 28.5 |
| 5 04 10.67 | | 5 11 22.90 | 5 05 11.85 | -28 34 42.9 |
| | 5 20 05.28 | 5 26 14.48 | 5 19 04.98 | 28 30 10.3 |
| 6 01 14.77 | | 6 08 03.64 | 6 01 20.47 | -28 27 42.7 |
| | 6 16 14.70 | 6 22 21.48 | 6 15 10.56 | 28 25 22.7 |
| 6 29 23.67 | | 7 05 09.45 | 6 29 06.34 | -28 26 27.6 |
| | 7 13 17.83 | 7 20 02.89 | 7 12 15.62 | 28 27 34.7 |
| 7 28 09.08 | | 8 01 17.50 | 7 26 16.16 | -28 31 34.7 |
| | 8 10 00.82 | 8 16 07.96 | 8 08 21.21 | 28 34 33.5 |
| 8 25 15.50 | | 8 29 03.34 | 8 23 00.47 | -28 38 20.1 |
| | 9 06 14.92 | 9 12 14.11 | 9 05 03.99 | 28 40 09.7 |
| 9 22 10.84 | | 9 25 13.29 | 9 19 06.70 | -28 40 29.3 |
| | 10 04 09.30 | 10 09 21.92 | 10 02 11.88 | 28 38 56.6 |
| 10 18 04.39 | | 10 22 21.51 | 10 16 12.04 | -28 35 16.0 |
| | 11 01 05.54 | 11 06 06.76 | 10 29 19.99 | 28 30 44.5 |
| 11 13 01.66 | | 11 19 03.19 | 11 12 18.23 | -28 25 54.5 |
| | 11 29 01.42 | 12 03 15.16 | 11 26 03.32 | 28 21 31.1 |
| 12 10 23.85 | | 12 16 07.72 | 12 10 02.88 | -28 19 34.9 |
| | 12 26 16.50 | 12 30 22.03 | 12 23 09.36 | 28 18 31.8 |

YEAR = 1970

| PERIGEE<br>M D H | APOGEE<br>M D H | ZERO DEC.<br>M D H | EXTREME DEC.<br>M D H | APP. DEC.<br>° ' '' |
|---|---|---|---|---|
| | | | 1 06 13.32 | -28 21 05.3 |
| 1 08 09.97 | | 1 12 13.87 | 1 19 14.63 | 28 23 17.9 |
| | 1 22 19.96 | 1 27 03.65 | 2 02 23.57 | -28 27 35.7 |
| 2 05 23.00 | | 2 08 23.09 | 2 15 20.30 | 28 29 51.3 |
| | 2 18 22.19 | 2 23 09.27 | 3 02 07.75 | -28 31 17.3 |
| 3 06 09.61 | | 3 08 10.12 | 3 15 03.33 | 28 30 35.7 |
| | 3 18 11.72 | 3 22 15.83 | 3 29 13.73 | -28 27 17.9 |
| 4 03 10.84 | | 4 04 20.31 | 4 11 11.56 | 28 23 24.2 |
| | 4 15 06.34 | 4 18 23.32 | 4 25 18.92 | -28 17 40.9 |
| 4 30 04.18 | | 5 02 03.87 | 5 08 19.90 | 28 12 59.8 |
| | 5 13 01.77 | 5 16 07.12 | 5 23 01.32 | -28 08 51.0 |
| 5 25 07.60 | | 5 29 08.98 | 6 05 03.29 | 28 06 18.2 |
| | 6 09 20.09 | 6 12 14.50 | 6 19 09.57 | -28 06 08.2 |
| 6 21 18.00 | | 6 25 13.63 | 7 02 09.37 | 28 06 42.1 |
| | 7 07 11.84 | 7 09 21.12 | 7 16 19.18 | -28 09 42.3 |
| 7 19 21.60 | | 7 22 20.13 | 7 29 14.67 | 28 11 45.1 |
| | 8 03 21.95 | 8 06 03.13 | 8 13 04.81 | -28 14 30.4 |
| 8 17 06.65 | | 8 19 05.30 | 8 25 20.24 | 28 15 17.0 |
| | 8 31 01.05 | 9 02 09.01 | 9 09 12.99 | -28 14 15.9 |
| 9 14 17.04 | | 9 15 16.18 | 9 22 03.08 | 28 12 00.8 |
| | 9 27 07.63 | 9 29 15.24 | 10 06 19.02 | -28 06 30.7 |
| 10 13 00.80 | | 10 13 02.62 | 10 19 11.39 | 28 01 48.5 |
| | 10 24 22.46 | 10 26 22.01 | 11 03 00.07 | -27 54 54.1 |
| 11 09 20.36 | | 11 09 10.56 | 11 15 20.34 | 27 50 30.7 |
| | 11 21 18.09 | 11 23 05.18 | 11 30 06.03 | -27 46 38.6 |
| 12 05 05.57 | | 12 06 15.75 | 12 13 04.65 | 27 45 19.8 |
| | 12 19 15.44 | 12 20 12.41 | 12 27 14.41 | -27 46 16.5 |
| 12 31 09.57 | | | | |

# MOON

## YEAR = 1963

| PERIGEE M D H | APOGEE M D H | ZERO DEC. M D H | EXTREME DEC. M D H | APP. DEC. ° ' '' |
|---|---|---|---|---|
| | | 1 03 00.57 | | |
| 1 04 08.33 | | 1 16 13.65 | 1 09 10.49 | 21 18 24.4 |
| | 1 17 08.10 | | 1 23 21.05 | -21 17 52.8 |
| 1 29 07.47 | | 1 30 06.26 | 2 05 17.88 | 21 18 16.5 |
| | 2 14 04.36 | 2 12 21.50 | 2 20 06.68 | -21 20 48.9 |
| 2 26 00.32 | | 2 26 13.60 | 3 04 23.21 | 21 24 20.0 |
| | 3 13 19.97 | 3 12 04.25 | 3 19 15.44 | -21 31 43.7 |
| 3 26 07.84 | | 3 25 23.45 | 4 01 04.70 | 21 37 45.5 |
| | 4 10 02.54 | 4 08 10.41 | 4 15 22.75 | -21 47 23.5 |
| 4 23 18.60 | | 4 22 10.60 | 4 28 12.49 | 21 53 15.4 |
| | 5 07 04.30 | 5 05 16.82 | 5 13 05.06 | -22 00 46.5 |
| 5 22 04.03 | | 5 19 20.99 | 5 25 22.52 | 22 04 08.5 |
| | 6 03 13.97 | 6 01 23.96 | 6 09 11.39 | -22 07 15.8 |
| 6 19 07.65 | | 6 16 05.17 | 6 22 09.19 | 22 07 51.3 |
| | 7 01 05.55 | 6 29 07.85 | 7 06 18.41 | -22 07 50.0 |
| 7 16 18.35 | | 7 13 11.12 | 7 19 18.58 | 22 07 35.9 |
| | 7 28 23.68 | 7 26 15.95 | 8 03 02.42 | -22 07 57.9 |
| 8 11 00.39 | | 8 09 16.46 | 8 16 01.73 | 22 09 36.2 |
| | 8 25 18.43 | 8 22 23.66 | 8 30 10.98 | -22 13 37.9 |
| 9 06 15.60 | | 9 05 23.19 | 9 12 06.97 | 22 18 23.5 |
| | 9 22 12.62 | 9 19 06.75 | 9 26 19.35 | -22 26 39.1 |
| 10 04 15.12 | | 10 03 08.54 | 10 09 12.40 | 22 33 13.8 |
| | 10 20 02.46 | 10 16 13.25 | 10 24 02.89 | -22 42 45.4 |
| 11 02 00.56 | | 10 30 19.77 | 11 05 20.07 | 22 48 17.0 |
| | 11 16 06.28 | 11 12 19.63 | 11 20 09.49 | -22 54 44.1 |
| 11 30 13.20 | | 11 27 06.70. | 12 03 06.53 | 22 57 04.7 |
| | 12 13 09.38 | 12 10 02.43 | 12 17 15.78 | -22 58 45.0 |
| 12 29 00.21 | | 12 24 15.11 | 12 30 18.07 | 22 58 36.5 |

## YEAR = 1964

| PERIGEE M D H | APOGEE M D H | ZERO DEC. M D H | EXTREME DEC. M D H | APP. DEC. ° ' '' |
|---|---|---|---|---|
| | | 1 06 10.05 | | |
| | 1 09 23.70 | 1 20 20.74 | 1 13 22.54 | -22 58 14.0 |
| 1 26 01.44 | | 2 02 18.41 | 1 27 04.12 | 22 58 55.2 |
| | 2 06 19.76 | 2 17 01.83 | 2 10 06.03 | -23 01 00.7 |
| 2 21 07.94 | | 3 01 02.86 | 2 23 11.20 | 23 05 12.3 |
| | 3 05 16.82 | 3 15 08.94 | 3 08 14.12 | -23 11 45.8 |
| 3 17 15.59 | | 3 28 10.65 | 3 21 16.33 | 23 18 42.9 |
| | 4 02 11.95 | 4 11 18.61 | 4 04 22.15 | -23 27 38.0 |
| 4 14 09.69 | | 4 24 17.48 | 4 17 22.14 | 23 34 12.2 |
| | 4 30 02.35 | 5 09 05.37 | 5 02 05.61 | -23 41 26.0 |
| 5 12 16.32 | | 5 21 23.65 | 5 15 06.25 | 23 45 05.1 |
| | 5 27 08.97 | 6 05 15.17 | 5 29 12.34 | -23 48 12.0 |
| 6 10 02.08 | | 6 18 06.00 | 6 11 16.51 | 23 48 49.0 |
| | 6 23 11.57 | 7 02 22.63 | 6 25 18.43 | -23 48 46.7 |
| 7 08 11.02 | | 7 15 13.11 | 7 09 03.20 | 23 48 36.3 |
| | 7 20 20.82 | 7 30 03.97 | 7 23 00.53 | -23 48 40.3 |
| 8 05 14.91 | | 8 11 21.22 | 8 05 12.53 | 23 50 40.9 |
| | 8 17 12.27 | 8 26 08.91 | 8 19 07.11 | -23 53 52.0 |
| 9 02 02.34 | | 9 08 05.87 | 9 01 19.52 | 23 59 24.7 |
| | 9 14 06.79 | 9 22 15.57 | 9 15 14.53 | -24 06 17.1 |
| 9 27 04.69 | | 10 05 14.20 | 9 29 00.90 | 24 13 48.5 |
| | 10 12 02.75 | 10 20 00.79 | 10 12 22.51 | -24 21 56.7 |
| 10 23 21.98 | | 11 01 21.47 | 10 26 06.55 | 24 28 07.8 |
| | 11 08 22.03 | 11 16 11.55 | 11 09 06.34 | -24 33 46.3 |
| 11 20 23.94 | | 11 29 03.58 | 11 22 14.67 | 24 36 18.9 |
| | 12 06 11.89 | 12 13 21.49 | 12 06 13.41 | -24 37 40.1 |
| 12 19 11.27 | | 12 26 09.50 | 12 20 01.32 | 24 37 25.9 |

YEAR = 1965

| PERIGEE | APOGEE | ZERO DEC. | EXTREME DEC. | APP. DEC. |
|---|---|---|---|---|
| M D H | M D H | M D H | M D H | ° ' " |
| | 1 02 14.11 | 1 10 04.73 | 1 02 19.48 | -24 36 41.7 |
| 1 17 00.59 | | 1 22 16.71 | 1 16 12.64 | 24 37 22.2 |
| | 1 29 18.43 | 2 06 09.68 | 1 30 01.17 | -24 38 38.8 |
| 2 14 10.74 | | 2 19 01.69 | 2 12 22.24 | 24 43 22.6 |
| | 2 26 09.89 | 3 05 14.76 | 2 26 07.33 | -24 48 34.1 |
| 3 14 09.10 | | 3 18 11.43 | 3 12 05.08 | 24 56 36.5 |
| | 3 26 05.54 | 4 01 21.84 | 3 25 14.65 | -25 03 54.2 |
| 4 09 10.75 | | 4 14 20.34 | 4 08 10.47 | 25 11 27.8 |
| | 4 23 01.47 | 4 29 06.95 | 4 21 22.82 | -25 17 21.4 |
| 5 05 01.14 | | 5 12 03.45 | 5 05 16.48 | 25 21 21.9 |
| | 5 20 19.54 | 5 26 16.64 | 5 19 06.86 | -25 23 40.6 |
| 6 01 18.45 | | 6 08 09.13 | 6 02 00.59 | 25 24 06.9 |
| | 6 17 09.96 | 6 23 01.19 | 6 15 13.92 | -25 23 37.2 |
| 6 30 00.14 | | 7 05 14.74 | 6 29 10.40 | 25 23 09.5 |
| | 7 14 17.22 | 7 20 07.72 | 7 12 19.72 | -25 22 45.7 |
| 7 28 09.42 | | 8 01 21.71 | 7 26 20.58 | 25 24 45.7 |
| | 8 10 19.67 | 8 16 12.71 | 8 09 00.98 | -25 27 05.7 |
| 8 25 18.56 | | 8 29 06.58 | 8 23 05.59 | 25 33 06.1 |
| | 9 07 04.09 | 9 12 17.85 | 9 05 06.71 | -25 38 31.3 |
| 9 22 23.42 | | 9 25 16.57 | 9 19 12.69 | 25 46 49.7 |
| | 10 04 19.66 | 10 10 00.62 | 10 02 13.86 | -25 53 11.4 |
| 10 20 10.98 | | 10 23 02.04 | 10 16 18.19 | 25 59 57.9 |
| | 11 01 15.14 | 11 06 09.34 | 10 29 22.28 | -26 04 10.7 |
| 11 14 07.61 | | 11 19 09.52 | 11 13 00.14 | 26 06 42.9 |
| | 11 29 12.04 | 12 03 18.76 | 11 26 06.89 | -26 07 17.6 |
| 12 11 06.00 | | 12 16 14.97 | 12 10 08.06 | 26 06 32.7 |
| | 12 27 07.26 | 12 31 03.01 | 12 23 14.41 | -26 05 19.9 |

YEAR = 1966

| PERIGEE | APOGEE | ZERO DEC. | EXTREME DEC. | APP. DEC. |
|---|---|---|---|---|
| M D H | M D H | M D H | M D H | ° ' " |
| | | | 1 06 18.10 | 26 05 24.2 |
| 1 08 10.44 | | 1 12 20.34 | 1 19 20.19 | -26 06 02.6 |
| | 1 23 19.43 | 1 27 09.24 | 2 03 04.68 | 26 10 33.4 |
| 2 05 22.21 | | 2 09 03.90 | 2 16 01.14 | -26 14 43.0 |
| | 2 19 20.64 | 2 23 14.34 | 3 02 13.75 | 26 23 08.3 |
| 3 06 10.63 | | 3 08 13.97 | 3 15 06.91 | -26 29 02.0 |
| | 3 19 02.83 | 3 22 19.92 | 3 29 20.54 | 26 37 06.4 |
| 4 03 18.76 | | 4 05 00.79 | 4 11 14.58 | -26 41 35.9 |
| | 4 15 18.32 | 4 19 02.86 | 4 26 02.07 | 26 45 35.4 |
| 5 01 14.34 | | 5 02 10.18 | 5 08 23.54 | -26 46 53.8 |
| | 5 13 13.00 | 5 16 10.87 | 5 23 08.02 | 26 46 42.4 |
| 5 27 14.06 | | 5 29 17.07 | 6 05 08.29 | -26 45 39.5 |
| | 6 10 07.84 | 6 12 19.00 | 6 19 15.53 | 26 44 21.0 |
| 6 22 08.47 | | 6 25 22.14 | 7 02 15.63 | -26 43 36.8 |
| | 7 08 01.44 | 7 10 02.29 | 7 17 00.52 | 26 44 52.8 |
| 7 20 01.22 | | 7 23 03.41 | 7 29 21.30 | -26 46 45.3 |
| | 8 04 15.86 | 8 06 08.45 | 8 13 09.98 | 26 52 16.6 |
| 8 17 06.62 | | 8 19 10.73 | 8 26 02.22 | -26 56 50.9 |
| | 8 31 23.25 | 9 02 13.97 | 9 09 18.62 | 27 04 55.0 |
| 9 14 16.54 | | 9 15 20.57 | 9 22 07.94 | -27 10 02.5 |
| | 9 28 00.94 | 9 29 19.76 | 10 07 01.64 | 27 16 35.8 |
| 10 13 02.95 | | 10 13 07.57 | 10 19 15.62 | -27 19 35.0 |
| | 10 25 09.95 | 10 27 02.43 | 11 03 07.25 | 27 21 31.8 |
| 11 10 08.70 | | 11 09 17.44 | 11 16 01.01 | -27 21 18.2 |
| | 11 22 03.03 | 11 23 09.95 | 11 30 13.05 | 27 19 28.7 |
| 12 07 17.87 | | 12 07 00.44 | 12 13 10.51 | -27 17 50.1 |
| | 12 19 23.82 | 12 20 17.64 | 12 27 20.41 | 27 16 34.1 |

# MOON

## YEAR = 1967

| PERIGEE M D H | APOGEE M D H | ZERO DEC. M D H | EXTREME DEC. M D H | APP. DEC. ° ' " |
|---|---|---|---|---|
| 1 01 09.80 | | 1 03 05.24 | 1 09 18.32 | -27 16 52.6 |
| | 1 16 21.08 | 1 17 00.81 | 1 24 05.45 | 27 20 05.3 |
| 1 28 15.09 | | 1 30 10.57 | 2 06 00.06 | -27 23 49.5 |
| | 2 13 15.19 | 2 13 07.35 | 2 20 14.98 | 27 31 14.5 |
| 2 25 20.73 | | 2 26 18.84 | 3 05 04.93 | -27 36 27.6 |
| | 3 13 01.45 | 3 12 13.49 | 3 19 23.40 | 27 43 49.6 |
| 3 26 08.00 | | 3 26 05.64 | 4 01 11.16 | -27 47 23.9 |
| | 4 09 03.15 | 4 08 19.61 | 4 16 06.01 | 27 50 35.7 |
| 4 23 19.05 | | 4 22 16.71 | 4 28 19.52 | -27 51 02.1 |
| | 5 06 10.69 | 5 06 01.91 | 5 13 11.56 | 27 49 42.4 |
| 5 22 01.74 | | 5 20 01.78 | 5 26 05.19 | -27 48 05.4 |
| | 6 03 01.85 | 6 02 08.55 | 6 09 17.13 | 27 45 26.5 |
| 6 18 20.21 | | 6 16 08.07 | 6 22 14.53 | -27 44 26.7 |
| | 6 30 19.76 | 6 29 15.49 | 7 06 23.86 | 27 44 18.8 |
| 7 14 19.92 | | 7 13 12.69 | 7 19 22.19 | -27 46 04.3 |
| | 7 28 14.46 | 7 26 22.58 | 8 03 07.82 | 27 50 06.5 |
| 8 09 14.58 | | 8 09 18.05 | 8 16 04.00 | -27 54 26.9 |
| | 8 25 08.68 | 8 23 05.62 | 8 30 16.48 | 28 01 01.4 |
| 9 06 07.65 | | 9 06 01.88 | 9 12 09.10 | -28 05 34.9 |
| | 9 22 00.16 | 9 19 12.34 | 9 27 00.70 | 28 10 49.5 |
| 10 04 14.37 | | 10 03 12.24 | 10 09 15.22 | -28 12 58.5 |
| | 10 19 07.43 | 10 16 18.66 | 10 24 07.50 | 28 13 44.5 |
| 11 02 01.90 | | 10 30 23.34 | 11 05 23.59 | -28 12 43.5 |
| | 11 15 08.15 | 11 13 00.64 | 11 20 13.08 | 28 09 34.3 |
| 11 30 13.58 | | 11 27 08.66 | 12 03 09.74 | -28 07 23.5 |
| | 12 12 18.36 | 12 10 06.79 | 12 17 18.50 | 28 04 30.0 |
| 12 28 19.27 | | 12 24 14.83 | 12 30 19.82 | -28 04 32.5 |

## YEAR = 1968

| PERIGEE M D H | APOGEE M D H | ZERO DEC. M D H | EXTREME DEC. M D H | APP. DEC. ° ' " |
|---|---|---|---|---|
| | | 1 06 13.70 | | |
| | 1 09 12.85 | 1 20 19.29 | 1 14 01.11 | 28 05 50.8 |
| 1 24 23.65 | | 2 02 21.53 | 1 27 03.97 | -28 09 31.6 |
| | 2 06 10.06 | 2 17 01.06 | 2 10 09.06 | 28 14 55.5 |
| 2 18 16.41 | | 3 01 05.60 | 2 23 09.87 | -28 20 00.3 |
| | 3 05 06.49 | 3 15 09.77 | 3 08 17.56 | 28 25 34.8 |
| 3 17 01.64 | | 3 28 12.88 | 3 21 15.06 | -28 28 36.2 |
| | 4 01 23.48 | 4 11 20.42 | 4 05 01.47 | 28 30 23.4 |
| 4 14 06.85 | | 4 24 18.98 | 4 17 21.70 | -28 29 57.8 |
| | 4 29 09.13 | 5 09 06.73 | 5 02 08.00 | 28 27 24.3 |
| 5 12 16.83 | | 5 22 00.34 | 5 15 06.40 | -28 24 59.8 |
| | 5 26 11.77 | 6 05 14.84 | 5 29 13.43 | 28 21 05.9 |
| 6 10 02.66 | | 6 18 06.10 | 6 11 16.41 | -28 19 38.9 |
| | 6 22 19.09 | 7 02 20.48 | 6 25 18.60 | 28 18 06.6 |
| 7 08 08.62 | | 7 15 13.07 | 7 09 02.09 | -28 19 45.2 |
| | 7 20 09.21 | 7 30 01.06 | 7 23 00.59 | 28 22 04.0 |
| 8 05 03.25 | | 8 11 21.33 | 8 05 10.11 | -28 26 23.7 |
| | 8 17 02.81 | 8 26 06.79 | 8 19 07.75 | 28 30 57.8 |
| 8 31 02.37 | | 9 08 05.98 | 9 01 16.23 | -28 35 14.8 |
| | 9 13 22.00 | 9 22 14.91 | 9 15 15.77 | 28 38 38.5 |
| 9 25 20.43 | | 10 05 13.79 | 9 28 21.56 | -28 40 01.8 |
| | 10 11 17.07 | 10 20 00.98 | 10 12 23.67 | 28 39 29.1 |
| 10 23 15.33 | | 11 01 20.01 | 10 26 03.89 | -28 37 24.1 |
| | 11 08 08.98 | 11 16 11.08 | 11 09 06.45 | 28 33 16.8 |
| 11 20 23.81 | | 11 29 01.04 | 11 22 12.59 | -28 30 07.3 |
| | 12 05 14.82 | 12 13 19.10 | 12 06 12.08 | 28 26 06.0 |
| 12 19 12.47 | | 12 26 06.66 | 12 19 23.09 | -28 25 30.8 |

# MOON

## YEAR = 1969

| PERIGEE M D H | APOGEE M D H | ZERO DEC. M D H | EXTREME DEC. M D H | APP. DEC. ° ' '' |
|---|---|---|---|---|
| | 1 01 15.20 | 1 10 00.54 | 1 02 17.26 | 28 25 15.1 |
| 1 17 00.15 | | 1 22 14.38 | 1 16 09.44 | -28 28 42.7 |
| | 1 29 03.21 | 2 06 05.32 | 1 29 23.21 | 28 32 09.4 |
| 2 14 03.85 | | 2 18 23.96 | 2 12 17.72 | -28 37 06.7 |
| | 2 25 22.15 | 3 05 11.65 | 2 26 06.37 | 28 40 45.2 |
| 3 13 01.68 | | 3 18 09.55 | 3 11 23.83 | -28 43 10.5 |
| | 3 25 18.51 | 4 01 20.18 | 3 25 14.42 | 28 43 32.0 |
| 4 07 00.11 | | 4 14 17.32 | 4 08 05.15 | -28 41 53.5 |
| | 4 22 13.66 | 4 29 05.69 | 4 21 22.25 | 28 38 28.5 |
| 5 04 10.67 | | 5 11 22.90 | 5 05 11.85 | -28 34 42.9 |
| | 5 20 05.28 | 5 26 14.48 | 5 19 04.98 | 28 30 10.3 |
| 6 01 14.77 | | 6 08 03.64 | 6 01 20.47 | -28 27 42.7 |
| | 6 16 14.70 | 6 22 21.48 | 6 15 10.56 | 28 25 22.7 |
| 6 29 23.67 | | 7 05 09.45 | 6 29 06.34 | -28 26 27.6 |
| | 7 13 17.83 | 7 20 02.89 | 7 12 15.62 | 28 27 34.7 |
| 7 28 09.08 | | 8 01 17.50 | 7 26 16.16 | -28 31 34.7 |
| | 8 10 00.82 | 8 16 07.96 | 8 08 21.21 | 28 34 33.5 |
| 8 25 15.50 | | 8 29 03.34 | 8 23 00.47 | -28 38 20.1 |
| | 9 06 14.92 | 9 12 14.11 | 9 05 03.99 | 28 40 09.7 |
| 9 22 10.84 | | 9 25 13.29 | 9 19 06.70 | -28 40 29.3 |
| | 10 04 09.30 | 10 09 21.92 | 10 02 11.88 | 28 38 56.6 |
| 10 18 04.39 | | 10 22 21.51 | 10 16 12.04 | -28 35 16.0 |
| | 11 01 05.54 | 11 06 06.76 | 10 29 19.99 | 28 30 44.5 |
| 11 13 01.66 | | 11 19 03.19 | 11 12 18.23 | -28 25 54.5 |
| | 11 29 01.42 | 12 03 15.16 | 11 26 03.32 | 28 21 31.1 |
| 12 10 23.85 | | 12 16 07.72 | 12 10 02.88 | -28 19 34.9 |
| | 12 26 16.50 | 12 30 22.03 | 12 23 09.36 | 28 18 31.8 |

## YEAR = 1970

| PERIGEE M D H | APOGEE M D H | ZERO DEC. M D H | EXTREME DEC. M D H | APP. DEC. ° ' '' |
|---|---|---|---|---|
| | | | 1 06 13.32 | -28 21 05.3 |
| 1 08 09.97 | | 1 12 13.87 | 1 19 14.63 | 28 23 17.9 |
| | 1 22 19.96 | 1 27 03.65 | 2 02 23.57 | -28 27 35.7 |
| 2 05 23.00 | | 2 08 23.09 | 2 15 20.30 | 28 29 51.3 |
| | 2 18 22.19 | 2 23 09.27 | 3 02 07.75 | -28 31 17.3 |
| 3 06 09.61 | | 3 08 10.12 | 3 15 03.33 | 28 30 35.7 |
| | 3 18 11.72 | 3 22 15.83 | 3 29 13.73 | -28 27 17.9 |
| 4 03 10.84 | | 4 04 20.31 | 4 11 11.56 | 28 23 24.2 |
| | 4 15 06.34 | 4 18 23.32 | 4 25 18.92 | -28 17 40.9 |
| 4 30 04.18 | | 5 02 03.87 | 5 08 19.90 | 28 12 59.8 |
| | 5 13 01.77 | 5 16 07.12 | 5 23 01.32 | -28 08 51.0 |
| 5 25 07.60 | | 5 29 08.98 | 6 05 03.29 | 28 06 18.2 |
| | 6 09 20.09 | 6 12 14.50 | 6 19 09.57 | -28 06 08.2 |
| 6 21 18.00 | | 6 25 13.63 | 7 02 09.37 | 28 06 42.1 |
| | 7 07 11.84 | 7 09 21.12 | 7 16 19.18 | -28 09 42.3 |
| 7 19 21.60 | | 7 22 20.13 | 7 29 14.67 | 28 11 45.1 |
| | 8 03 21.95 | 8 06 03.13 | 8 13 04.81 | -28 14 30.4 |
| 8 17 06.65 | | 8 19 05.30 | 8 25 20.24 | 28 15 17.0 |
| | 8 31 01.05 | 9 02 09.01 | 9 09 12.99 | -28 14 15.9 |
| 9 14 17.04 | | 9 15 16.18 | 9 22 03.08 | 28 12 00.8 |
| | 9 27 07.63 | 9 29 15.24 | 10 06 19.02 | -28 06 30.7 |
| 10 13 00.80 | | 10 13 02.62 | 10 19 11.39 | 28 01 48.5 |
| | 10 24 22.46 | 10 26 22.01 | 11 03 00.07 | -27 54 54.1 |
| 11 09 20.36 | | 11 09 10.56 | 11 15 20.34 | 27 50 30.7 |
| | 11 21 18.09 | 11 23 05.18 | 11 30 06.03 | -27 46 38.6 |
| 12 05 05.57 | | 12 06 15.75 | 12 13 04.65 | 27 45 19.8 |
| | 12 19 15.44 | 12 20 12.41 | 12 27 14.41 | -27 46 16.5 |
| 12 31 09.57 | | | | |

YEAR = 1987

| PERIGEE M D H | APOGEE M D H | ZERO DEC. M D H | EXTREME DEC. M D H | APP. DEC. ° ' '' |
|---|---|---|---|---|
| | | 1 05 21.84 | | |
| | 1 13 05.01 | 1 20 15.76 | 1 13 06.41 | 28 16 36.1 |
| 1 28 11.24 | | 2 02 06.17 | 1 27 03.41 | -28 21 18.4 |
| | 2 09 16.08 | 2 16 20.68 | 2 09 12.29 | 28 25 30.7 |
| 2 25 15.90 | | 3 01 16.16 | 2 23 11.36 | -28 31 11.3 |
| | 3 09 10.53 | 3 16 03.30 | 3 08 19.42 | 28 35 02.3 |
| 3 24 19.01 | | 3 29 01.74 | 3 22 17.12 | -28 37 40.3 |
| | 4 06 06.65 | 4 12 11.81 | 4 05 03.48 | 28 38 07.5 |
| 4 18 16.66 | | 4 25 09.27 | 4 18 22.63 | -28 36 38.0 |
| | 5 04 01.73 | 5 09 21.03 | 5 02 11.40 | 28 33 39.9 |
| 5 15 22.66 | | 5 22 14.65 | 5 16 05.49 | -28 30 22.4 |
| | 5 31 17.82 | 6 06 05.38 | 5 29 18.18 | 28 26 44.3 |
| 6 13 01.30 | | 6 18 19.43 | 6 12 14.38 | -28 25 09.6 |
| | 6 28 04.23 | 7 03 11.99 | 6 25 23.80 | 28 23 55.0 |
| 7 11 09.73 | | 7 16 01.58 | 7 10 00.33 | -28 26 05.8 |
| | 7 25 07.83 | 7 30 17.29 | 7 23 04.81 | 28 28 06.6 |
| 8 08 19.38 | | 8 12 10.09 | 8 06 09.90 | -28 33 04.2 |
| | 8 21 13.64 | 8 26 22.46 | 8 19 10.39 | 28 36 32.9 |
| 9 06 02.77 | | 9 08 20.30 | 9 02 17.79 | -28 40 52.5 |
| | 9 18 03.11 | 9 23 04.80 | 9 15 17.22 | 28 42 52.4 |
| 10 04 00.57 | | 10 06 06.33 | 9 29 23.88 | -28 43 22.4 |
| | 10 15 21.39 | 10 20 12.63 | 10 13 01.31 | 28 41 59.3 |
| 10 30 02.59 | | 11 02 14.28 | 10 27 05.14 | -28 38 30.0 |
| | 11 12 17.91 | 11 16 21.21 | 11 09 09.67 | 28 34 31.0 |
| 11 24 14.87 | | 11 29 19.66 | 11 23 11.74 | -28 30 20.8 |
| | 12 10 14.12 | 12 14 05.17 | 12 06 17.12 | 28 27 02.3 |
| 12 22 11.31 | | 12 27 00.24 | 12 20 20.58 | -28 26 18.1 |

YEAR = 1988

| PERIGEE M D H | APOGEE M D H | ZERO DEC. M D H | EXTREME DEC. M D H | APP. DEC. ° ' '' |
|---|---|---|---|---|
| | | | 1 02 23.17 | 28 26 28.7 |
| | 1 07 05.86 | 1 10 11.71 | 1 17 06.93 | -28 30 16.1 |
| 1 19 20.94 | | 1 23 06.93 | 1 30 04.31 | 28 33 15.9 |
| | 2 03 10.40 | 2 06 17.34 | 2 13 16.78 | -28 38 15.5 |
| 2 17 09.77 | | 2 19 16.69 | 2 26 10.02 | 28 40 45.3 |
| | 3 01 11.94 | 3 04 23.12 | 3 12 00.54 | -28 42 22.6 |
| 3 16 20.52 | | 3 18 03.84 | 3 24 17.23 | 28 41 46.7 |
| | 3 29 00.49 | 4 01 05.73 | 4 08 06.21 | -28 38 39.2 |
| 4 13 22.86 | | 4 14 13.77 | 4 21 01.76 | 28 35 09.2 |
| | 4 25 18.59 | 4 28 13.03 | 5 05 11.57 | -28 29 58.5 |
| 5 10 22.49 | | 5 11 20.95 | 5 18 10.31 | 28 26 07.8 |
| | 5 23 13.80 | 5 25 20.52 | 6 01 18.03 | -28 22 54.5 |
| 6 04 23.82 | | 6 08 01.86 | 6 14 17.72 | 28 21 24.5 |
| | 6 20 08.16 | 6 22 03.65 | 6 29 02.42 | -28 22 17.6 |
| 7 02 05.72 | | 7 05 06.67 | 7 11 23.78 | 28 23 44.5 |
| | 7 18 00.54 | 7 19 10.17 | 7 26 11.94 | -28 27 35.8 |
| 7 30 08.01 | | 8 01 13.52 | 8 08 04.96 | 28 30 08.3 |
| | 8 14 11.72 | 8 15 16.26 | 8 22 21.24 | -28 33 20.9 |
| 8 27 16.85 | | 8 28 23.07 | 9 04 10.60 | 28 34 17.1 |
| | 9 10 15.08 | 9 11 22.24 | 9 19 04.95 | -28 33 24.2 |
| 9 25 03.67 | | 9 25 10.14 | 10 01 17.67 | 28 31 15.5 |
| | 10 07 20.48 | 10 09 04.47 | 10 16 10.76 | -28 25 58.2 |
| 10 23 12.37 | | 10 22 20.41 | 10 29 02.40 | 28 21 41.6 |
| | 11 04 10.92 | 11 05 11.06 | 11 12 15.79 | -28 15 29.4 |
| 11 20 10.48 | | 11 19 03.92 | 11 25 11.71 | 28 12 02.6 |
| | 12 02 06.46 | 12 02 18.01 | 12 09 22.06 | -28 09 21.4 |
| 12 16 03.73 | | 12 16 08.80 | 12 22 20.07 | 28 09 12.5 |
| | 12 30 03.95 | 12 30 01.15 | | |

YEAR = 1989

| PERIGEE | APOGEE | ZERO DEC. | EXTREME DEC. | APP. DEC. |
|---|---|---|---|---|
| M D H | M D H | M D H | M D H | ° ' " |
| | | | 1 06 06.42 | -28 11 16.9 |
| 1 10 22.89 | | 1 12 13.68 | 1 19 02.66 | 28 13 40.3 |
| | 1 26 23.98 | 1 26 08.35 | 2 02 16.17 | -28 17 13.5 |
| 2 07 22.08 | | 2 08 21.31 | 2 15 08.01 | 28 18 51.7 |
| | 2 23 14.48 | 2 22 15.28 | 3 02 01.34 | -28 19 09.0 |
| 3 08 07.90 | | 3 08 07.81 | 3 14 13.88 | 28 17 39.4 |
| | 3 22 18.37 | 3 21 21.66 | 3 29 08.53 | -28 12 58.4 |
| 4 05 19.62 | | 4 04 19.00 | 4 10 21.48 | 28 08 51.3 |
| | 4 18 21.33 | 4 18 03.57 | 4 25 13.98 | -28 01 53.2 |
| 5 04 04.57 | | 5 02 04.43 | 5 08 06.56 | 27 57 45.6 |
| | 5 16 09.49 | 5 15 09.48 | 5 22 19.02 | -27 52 47.4 |
| 6 01 05.29 | | 5 29 11.03 | 6 04 15.91 | 27 51 08.7 |
| | 6 13 02.43 | 6 11 15.96 | 6 19 01.18 | -27 50 24.8 |
| 6 28 04.39 | | 6 25 15.84 | 7 02 00.18 | 27 51 36.2 |
| | 7 10 20.83 | 7 08 23.21 | 7 16 08.96 | -27 53 53.5 |
| 7 23 07.05 | | 7 22 21.05 | 7 29 06.75 | 27 55 52.5 |
| | 8 07 15.39 | 8 05 06.88 | 8 12 17.84 | -27 57 38.1 |
| 8 19 12.58 | | 8 19 04.53 | 8 25 12.28 | 27 57 42.6 |
| | 9 04 08.43 | 9 01 14.23 | 9 09 02.56 | -27 55 35.5 |
| 9 16 15.40 | | 9 15 14.45 | 9 21 17.97 | 27 52 32.7 |
| | 10 01 20.08 | 9 28 20.69 | 10 06 09.74 | -27 46 03.7 |
| 10 15 01.41 | | 10 13 01.35 | 10 19 01.43 | 27 41 08.5 |
| | 10 28 22.29 | 10 26 02.22 | 11 02 15.18 | -27 33 31.4 |
| 11 12 13.40 | | 11 09 10.98 | 11 15 10.87 | 27 29 41.8 |
| | 11 25 03.84 | 11 22 07.62 | 11 29 20.11 | -27 25 21.5 |
| 12 10 22.66 | | 12 06 17.82 | 12 12 21.15 | 27 24 54.1 |
| | 12 22 19.49 | 12 19 14.11 | 12 27 02.20 | -27 25 14.3 |

YEAR = 1990

| PERIGEE | APOGEE | ZERO DEC. | EXTREME DEC. | APP. DEC. |
|---|---|---|---|---|
| M D H | M D H | M D H | M D H | ° ' " |
| | | 1 02 22.65 | | |
| 1 07 18.85 | | 1 15 22.26 | 1 09 06.36 | 27 27 13.6 |
| | 1 19 16.00 | 1 30 04.22 | 1 23 10.05 | -27 29 12.4 |
| 2 02 02.77 | | 2 12 07.20 | 2 05 13.47 | 27 30 06.7 |
| | 2 16 13.18 | 2 26 12.33 | 2 19 18.85 | -27 29 15.5 |
| 2 28 08.13 | | 3 11 15.29 | 3 04 18.93 | 27 26 38.3 |
| | 3 16 07.76 | 3 25 22.52 | 3 19 03.15 | -27 21 09.3 |
| 3 28 08.20 | | 4 07 21.60 | 4 01 00.90 | 27 15 52.5 |
| | 4 12 20.52 | 4 22 08.74 | 4 15 09.90 | -27 08 06.3 |
| 4 25 16.88 | | 5 05 02.63 | 4 28 08.70 | 27 03 09.6 |
| | 5 10 00.25 | 5 19 17.20 | 5 12 15.29 | -26 57 13.3 |
| 5 24 03.09 | | 6 01 07.90 | 5 25 18.21 | 26 55 08.0 |
| | 6 06 04.10 | 6 15 23.40 | 6 08 20.41 | -26 53 15.6 |
| 6 21 10.96 | | 6 28 14.74 | 6 22 04.25 | 26 54 08.0 |
| | 7 03 15.85 | 7 13 04.52 | 7 06 02.39 | -26 55 08.4 |
| 7 19 11.31 | | 7 25 23.30 | 7 19 13.25 | 26 56 36.1 |
| | 7 31 08.35 | 8 09 10.28 | 8 02 09.68 | -26 57 11.4 |
| 8 15 10.09 | | 8 22 08.54 | 8 15 20.30 | 26 56 17.5 |
| | 8 28 03.01 | 9 05 17.95 | 8 29 17.84 | -26 53 30.4 |
| 9 09 11.37 | | 9 18 16.88 | 9 12 01.88 | 26 49 06.8 |
| | 9 24 22.24 | 10 03 03.38 | 9 26 01.88 | -26 42 29.2 |
| 10 06 18.53 | | 10 15 23.27 | 10 09 07.53 | 26 36 14.3 |
| | 10 22 15.95 | 10 30 13.24 | 10 23 08.76 | -26 28 28.0 |
| 11 03 23.26 | | 11 12 04.11 | 11 05 15.15 | 26 23 38.5 |
| | 11 19 02.89 | 11 26 21.77 | 11 19 14.44 | -26 18 40.9 |
| 12 02 10.93 | | 12 09 09.27 | 12 03 01.20 | 26 17 33.9 |
| | 12 16 03.55 | 12 24 04.20 | 12 16 19.75 | -26 16 51.6 |
| 12 30 23.91 | | | 12 30 12.25 | 26 18 19.2 |

| PERIGEE | APOGEE | ZERO DEC. | EXTREME DEC. | APP. DEC. |
|---|---|---|---|---|
| | | YEAR = 1991 | | |
| M D H | M D H | M D H | M D H | ° ' " |
| | | 1 05 16.82 | | |
| | 1 12 10.93 | 1 20 09.57 | 1 13 01.83 | -26 19 14.1 |
| 1 28 08.60 | | 2 02 02.79 | 1 26 22.01 | 26 19 19.6 |
| | 2 09 04.38 | 2 16 15.78 | 2 09 09.09 | -26 17 51.6 |
| 2 25 01.20 | | 3 01 13.17 | 2 23 05.13 | 26 13 46.9 |
| | 3 09 00.99 | 3 15 23.64 | 3 08 17.13 | -26 08 19.5 |
| 3 22 04.65 | | 3 28 21.70 | 3 22 10.54 | 26 01 12.8 |
| | 4 05 21.12 | 4 12 08.62 | 4 05 01.05 | -25 53 44.3 |
| 4 17 17.17 | | 4 25 03.66 | 4 18 16.31 | 25 47 14.7 |
| | 5 03 14.60 | 5 09 17.38 | 5 02 08.03 | -25 41 22.0 |
| 5 15 16.75 | | 5 22 08.32 | 5 16 00.19 | 25 38 18.6 |
| | 5 31 02.87 | 6 06 00.98 | 5 29 14.05 | -25 36 04.7 |
| 6 13 00.51 | | 6 18 13.91 | 6 12 09.98 | 25 36 21.6 |
| | 6 27 07.45 | 7 03 07.36 | 6 25 19.65 | -25 36 42.1 |
| 7 11 10.14 | | 7 15 21.86 | 7 09 20.37 | 25 37 32.4 |
| | 7 24 11.24 | 7 30 13.13 | 7 23 01.66 | -25 37 28.9 |
| 8 08 18.20 | | 8 12 07.84 | 8 06 05.67 | 25 35 33.2 |
| | 8 20 22.65 | 8 26 19.33 | 8 19 08.51 | -25 32 36.1 |
| 9 05 19.45 | | 9 08 18.17 | 9 02 12.89 | 25 26 37.8 |
| | 9 17 15.44 | 9 23 02.56 | 9 15 16.19 | -25 20 30.5 |
| 10 02 17.92 | | 10 06 02.92 | 9 29 18.20 | 25 12 26.2 |
| | 10 15 11.08 | 10 20 10.79 | 10 13 00.15 | -25 05 23.6 |
| 10 27 15.77 | | 11 02 09.12 | 10 26 23.76 | 24 59 00.2 |
| | 11 12 07.49 | 11 16 19.28 | 11 09 07.67 | -24 54 19.1 |
| 11 24 02.53 | | 11 29 13.79 | 11 23 07.46 | 24 52 07.1 |
| | 12 10 01.85 | 12 14 03.10• | 12 06 14.42 | -24 51 06.2 |
| 12 22 09.52 | | 12 26 19.68 | 12 20 17.82 | 24 51 50.8 |

| PERIGEE | APOGEE | ZERO DEC. | EXTREME DEC. | APP. DEC. |
|---|---|---|---|---|
| | | YEAR = 1992 | | |
| M D H | M D H | M D H | M D H | ° ' " |
| | | | 1 02 20.48 | -24 52 15.3 |
| | 1 06 11.65 | 1 10 09.90 | 1 17 05.13 | 24 51 37.4 |
| 1 19 22.30 | | 1 23 04.64 | 1 30 02.54 | -24 49 54.9 |
| | 2 02 11.84 | 2 06 16.16 | 2 13 14.83 | 24 44 34.3 |
| 2 17 10.90 | | 2 19 15.86 | 2 26 09.38 | -24 39 25.2 |
| | 2 29 20.91 | 3 04 22.54 | 3 11 21.66 | 24 30 26.0 |
| 3 16 17.68 | | 3 18 02.78 | 3 24 17.25 | -24 23 38.6 |
| | 3 28 14.32 | 4 01 05.47 | 4 08 02.73 | 24 15 17.7 |
| 4 13 06.91 | | 4 14 11.23 | 4 21 01.66 | -24 09 59.2 |
| | 4 25 09.84 | 4 28 12.91 | 5 05 08.40 | 24 05 38.9 |
| 5 08 11.73 | | 5 11 17.07 | 5 18 09.72 | -24 03 34.0 |
| | 5 23 04.87 | 5 25 20.63 | 6 01 16.20 | 24 03 06.1 |
| 6 04 02.10 | | 6 07 21.99 | 6 14 16.84 | -24 03 13.8 |
| | 6 19 21.95 | 6 22 04.23 | 6 29 02.04 | 24 03 32.2 |
| 7 02 00.63 | | 7 05 04.32 | 7 11 23.14 | -24 03 09.4 |
| | 7 17 10.56 | 7 19 11.35 | 7 26 12.45 | 24 00 35.6 |
| 7 30 07.78 | | 8 01 13.11 | 8 08 05.11 | -23 57 34.2 |
| | 8 13 15.65 | 8 15 17.93 | 8 22 21.60 | 23 50 36.3 |
| 8 27 17.65 | | 8 28 23.78 | 9 04 11.67 | -23 44 54.4 |
| | 9 09 18.69 | 9 12 00.14 | 9 19 04.39 | 23 35 27.7 |
| 9 25 02.64 | | 9 25 10.52 | 10 01 19.33 | -23 29 09.7 |
| | 10 07 05.83 | 10 09 06.51 | 10 16 09.48 | 23 21 22.0 |
| 10 23 04.71 | | 10 22 19.36 | 10 29 04.11 | -23 17 13.0 |
| | 11 03 23.42 | 11 05 13.47 | 11 12 15.01 | 23 13 58.2 |
| 11 18 23.96 | | 11 19 01.58 | 11 25 13.15 | -23 13 01.8 |
| | 12 01 20.24 | 12 02 21.23 | 12 09 22.99 | 23 13 12.2 |
| 12 13 21.15 | | 12 16 06.74 | 12 22 21.28 | -23 13 25.8 |
| | 12 29 17.10 | 12 30 05.44 | | |

YEAR = 1993

| PERIGEE | APOGEE | ZERO DEC. | EXTREME DEC. | APP. DEC. |
|---|---|---|---|---|
| M D H | M D H | M D H | M D H | ° ' " |
| | | | 1 06 09.36 | 23 12 35.4 |
| 1 10 12.31 | | 1 12 13.50 | 1 19 03.97 | -23 10 42.6 |
| | 1 26 10.27 | 1 26 13.33 | 2 02 20.16 | 23 05 07.9 |
| 2 07 20.41 | | 2 08 23.21 | 2 15 09.91 | -23 00 00.7 |
| | 2 22 17.91 | 2 22 20.32 | 3 02 05.06 | 22 50 18.7 |
| 3 08 08.61 | | 3 08 10.62 | 3 14 16.54 | -22 43 50.6 |
| | 3 21 18.99 | 3 22 02.37 | 3 29 11.37 | 22 34 25.6 |
| 4 05 19.53 | | 4 04 21.34 | 4 11 00.82 | -22 29 32.5 |
| | 4 18 05.13 | 4 18 08.22 | 4 25 16.37 | 22 24 19.9 |
| 5 04 00.25 | | 5 02 05.70 | 5 08 10.28 | -22 22 30.7 |
| | 5 15 21.82 | 5 15 14.80 | 5 22 22.23 | 22 21 37.7 |
| 5 31 11.19 | | 5 29 11.79 | 6 04 19.71 | -22 21 46.8 |
| | 6 12 16.35 | 6 11 22.54 | 6 19 06.03 | 22 22 02.2 |
| 6 25 17.49 | | 6 25 17.36 | 7 02 04.04 | -22 21 29.4 |
| | 7 10 10.86 | 7 09 07.03 | 7 16 15.58 | 22 19 09.0 |
| 7 22 08.51 | | 7 23 00.18 | 7 29 10.84 | -22 15 54.3 |
| | 8 07 03.94 | 8 05 15.26 | 8 13 01.41 | 22 09 15.9 |
| 8 19 06.93 | | 8 19 09.23 | 8 25 16.67 | -22 03 30.8 |
| | 9 03 17.01 | 9 01 22.41 | 9 09 09.90 | 21 54 10.3 |
| 9 16 14.76 | | 9 15 19.84 | 9 21 23.01 | -21 48 05.1 |
| | 9 30 21.37 | 9 29 04.40 | 10 06 16.29 | 21 40 02.3 |
| 10 15 01.89 | | 10 13 06.43 | 10 19 07.11 | -21 36 11.7 |
| | 10 28 00.01 | 10 26 09.98 | 11 02 21.52 | 21 32 37.7 |
| 11 12 12.08 | | 11 09 15.29 | 11 15 17.17 | -21 31 52.4 |
| | 11 24 12.64 | 11 22 16.50 | 11 30 03.55 | 21 32 04.4 |
| 12 10 14.14 | | 12 06 21.96 | 12 13 03.86 | -21 32 21.2 |
| | 12 22 07.88 | 12 20 00.75 | 12 27 11.73 | 21 32 07.1 |

YEAR = 1994

| PERIGEE | APOGEE | ZERO DEC. | EXTREME DEC. | APP. DEC. |
|---|---|---|---|---|
| M D H | M D H | M D H | M D H | ° ' " |
| | | 1 03 03.86 | | |
| 1 06 01.22 | | 1 16 10.23 | 1 09 13.19 | -21 30 07.2 |
| | 1 19 05.25 | 1 30 11.13 | 1 23 21.55 | 21 25 37.7 |
| 1 31 03.80 | | 2 12 19.31 | 2 05 20.14 | -21 20 11.6 |
| | 2 16 01.58 | 2 26 20.69 | 2 20 07.25 | 21 11 32.7 |
| 2 27 22.26 | | 3 12 02.65 | 3 05 01.84 | -21 04 47.9 |
| | 3 15 17.20 | 3 26 07.46 | 3 19 15.28 | 20 55 55.3 |
| 3 28 06.25 | | 4 08 08.34 | 4 01 08.41 | -20 51 01.4 |
| | 4 11 23.77 | 4 22 17.68 | 4 15 21.48 | 20 45 59.1 |
| 4 25 17.30 | | 5 05 13.75 | 4 28 17.22 | -20 44 22.1 |
| | 5 09 02.32 | 5 20 02.14 | 5 13 03.07 | 20 43 44.6 |
| 5 24 02.99 | | 6 01 20.51 | 5 26 03.81 | -20 44 07.5 |
| | 6 05 12.68 | 6 16 08.92 | 6 09 09.45 | 20 44 59.3 |
| 6 21 06.73 | | 6 29 05.12 | 6 22 14.52 | -20 44 31.4 |
| | 7 03 04.72 | 7 13 15.09 | 7 06 17.23 | 20 43 15.0 |
| 7 18 17.48 | | 7 26 14.77 | 7 19 23.73 | -20 39 49.4 |
| | 7 30 23.00 | 8 09 22.05 | 8 03 02.11 | 20 34 42.0 |
| 8 12 23.21 | | 8 22 23.97 | 8 16 06.69 | -20 28 35.1 |
| | 8 27 17.86 | 9 06 06.66 | 8 30 11.01 | 20 20 51.1 |
| 9 08 14.50 | | 9 19 07.61 | 9 12 12.33 | -20 14 30.3 |
| | 9 24 12.05 | 10 03 16.66 | 9 26 18.89 | 20 07 37.0 |
| 10 06 14.21 | | 10 16 13.53 | 10 09 18.52 | -20 03 48.8 |
| | 10 22 01.79 | 10 31 02.93 | 10 24 01.55 | 20 00 52.8 |
| 11 03 23.77 | | 11 12 19.05 | 11 06 03.30 | -20 00 25.8 |
| | 11 18 05.12 | 11 27 12.04 | 11 20 07.72 | 20 01 16.4 |
| 12 02 12.40 | | 12 10 02.04 | 12 03 14.64 | -20 02 00.3 |
| | 12 15 07.84 | 12 24 19.45 | 12 17 14.59 | 20 02 57.9 |
| 12 30 23.13 | | | 12 31 02.55 | -20 01 17.2 |

YEAR = 1987

| PERIGEE<br>M D H | APOGEE<br>M D H | ZERO DEC.<br>M D H | EXTREME DEC.<br>M D H | APP. DEC.<br>° ' '' |
|---|---|---|---|---|
| | | 1 05 21.84 | | |
| | 1 13 05.01 | 1 20 15.76 | 1 13 06.41 | 28 16 36.1 |
| 1 28 11.24 | | 2 02 06.17 | 1 27 03.41 | -28 21 18.4 |
| | 2 09 16.08 | 2 16 20.68 | 2 09 12.29 | 28 25 30.7 |
| 2 25 15.90 | | 3 01 16.16 | 2 23 11.36 | -28 31 11.3 |
| | 3 09 10.53 | 3 16 03.30 | 3 08 19.42 | 28 35 02.3 |
| 3 24 19.01 | | 3 29 01.74 | 3 22 17.12 | -28 37 40.3 |
| | 4 06 06.65 | 4 12 11.81 | 4 05 03.48 | 28 38 07.5 |
| 4 18 16.66 | | 4 25 09.27 | 4 18 22.63 | -28 36 38.0 |
| | 5 04 01.73 | 5 09 21.03 | 5 02 11.40 | 28 33 39.9 |
| 5 15 22.66 | | 5 22 14.65 | 5 16 05.49 | -28 30 22.4 |
| | 5 31 17.82 | 6 06 05.38 | 5 29 18.18 | 28 26 44.3 |
| 6 13 01.30 | | 6 18 19.43 | 6 12 14.38 | -28 25 09.6 |
| | 6 28 04.23 | 7 03 11.99 | 6 25 23.80 | 28 23 55.0 |
| 7 11 09.73 | | 7 16 01.58 | 7 10 00.33 | -28 26 05.8 |
| | 7 25 07.83 | 7 30 17.29 | 7 23 04.81 | 28 28 06.6 |
| 8 08 19.38 | | 8 12 10.09 | 8 06 09.90 | -28 33 04.2 |
| | 8 21 13.64 | 8 26 22.46 | 8 19 10.39 | 28 36 32.9 |
| 9 06 02.77 | | 9 08 20.30 | 9 02 17.79 | -28 40 52.5 |
| | 9 18 03.11 | 9 23 04.80 | 9 15 17.22 | 28 42 52.4 |
| 10 04 00.57 | | 10 06 06.33 | 9 29 23.88 | -28 43 22.4 |
| | 10 15 21.39 | 10 20 12.63 | 10 13 01.31 | 28 41 59.3 |
| 10 30 02.59 | | 11 02 14.28 | 10 27 05.14 | -28 38 30.0 |
| | 11 12 17.91 | 11 16 21.21 | 11 09 09.67 | 28 34 31.0 |
| 11 24 14.87 | | 11 29 19.66 | 11 23 11.74 | -28 30 20.8 |
| | 12 10 14.12 | 12 14 05.17 | 12 06 17.12 | 28 27 02.3 |
| 12 22 11.31 | | 12 27 00.24 | 12 20 20.58 | -28 26 18.1 |

YEAR = 1988

| PERIGEE<br>M D H | APOGEE<br>M D H | ZERO DEC.<br>M D H | EXTREME DEC.<br>M D H | APP. DEC.<br>° ' '' |
|---|---|---|---|---|
| | | | 1 02 23.17 | 28 26 28.7 |
| | 1 07 05.86 | 1 10 11.71 | 1 17 06.93 | -28 30 16.1 |
| 1 19 20.94 | | 1 23 06.93 | 1 30 04.31 | 28 33 15.9 |
| | 2 03 10.40 | 2 06 17.34 | 2 13 16.78 | -28 38 15.5 |
| 2 17 09.77 | | 2 19 16.69 | 2 26 10.02 | 28 40 45.3 |
| | 3 01 11.94 | 3 04 23.12 | 3 12 00.54 | -28 42 22.6 |
| 3 16 20.52 | | 3 18 03.84 | 3 24 17.23 | 28 41 46.7 |
| | 3 29 00.49 | 4 01 05.73 | 4 08 06.21 | -28 38 39.2 |
| 4 13 22.86 | | 4 14 13.77 | 4 21 01.76 | 28 35 09.2 |
| | 4 25 18.59 | 4 28 13.03 | 5 05 11.57 | -28 29 58.5 |
| 5 10 22.49 | | 5 11 20.95 | 5 18 10.31 | 28 26 07.8 |
| | 5 23 13.80 | 5 25 20.52 | 6 01 18.03 | -28 22 54.5 |
| 6 04 23.82 | | 6 08 01.86 | 6 14 17.72 | 28 21 24.5 |
| | 6 20 08.16 | 6 22 03.65 | 6 29 02.42 | -28 22 17.6 |
| 7 02 05.72 | | 7 05 06.67 | 7 11 23.78 | 28 23 44.5 |
| | 7 18 00.54 | 7 19 10.17 | 7 26 11.94 | -28 27 35.8 |
| 7 30 08.01 | | 8 01 13.52 | 8 08 04.96 | 28 30 08.3 |
| | 8 14 11.72 | 8 15 16.26 | 8 22 21.24 | -28 33 20.9 |
| 8 27 16.85 | | 8 28 23.07 | 9 04 10.60 | 28 34 17.1 |
| | 9 10 15.08 | 9 11 22.24 | 9 19 04.95 | -28 33 24.2 |
| 9 25 03.67 | | 9 25 10.14 | 10 01 17.67 | 28 31 15.5 |
| | 10 07 20.48 | 10 09 04.47 | 10 16 10.76 | -28 25 58.2 |
| 10 23 12.37 | | 10 22 20.41 | 10 29 02.40 | 28 21 41.6 |
| | 11 04 10.92 | 11 05 11.06 | 11 12 15.79 | -28 15 29.4 |
| 11 20 10.48 | | 11 19 03.92 | 11 25 11.71 | 28 12 02.6 |
| | 12 02 06.46 | 12 02 18.01 | 12 09 22.06 | -28 09 21.4 |
| 12 16 03.73 | | 12 16 08.80 | 12 22 20.07 | 28 09 12.5 |
| | 12 30 03.95 | 12 30 01.15 | | |

| PERIGEE | APOGEE | ZERO DEC. | EXTREME DEC. | APP. DEC. |
|---|---|---|---|---|

YEAR = 1989

| M D H | M D H | M D H | M D H | ° ' " |
|---|---|---|---|---|
| | | | 1 06 06.42 | -28 11 16.9 |
| 1 10 22.89 | | 1 12 13.68 | 1 19 02.66 | 28 13 40.3 |
| | 1 26 23.98 | 1 26 08.35 | 2 02 16.17 | -28 17 13.5 |
| 2 07 22.08 | | 2 08 21.31 | 2 15 08.01 | 28 18 51.7 |
| | 2 23 14.48 | 2 22 15.28 | 3 02 01.34 | -28 19 09.0 |
| 3 08 07.90 | | 3 08 07.81 | 3 14 13.88 | 28 17 39.4 |
| | 3 22 18.37 | 3 21 21.66 | 3 29 08.53 | -28 12 58.4 |
| 4 05 19.62 | | 4 04 19.00 | 4 10 21.48 | 28 08 51.3 |
| | 4 18 21.33 | 4 18 03.57 | 4 25 13.98 | -28 01 53.2 |
| 5 04 04.57 | | 5 02 04.43 | 5 08 06.56 | 27 57 45.6 |
| | 5 16 09.49 | 5 15 09.48 | 5 22 19.02 | -27 52 47.4 |
| 6 01 05.29 | | 5 29 11.03 | 6 04 15.91 | 27 51 08.7 |
| | 6 13 02.43 | 6 11 15.96 | 6 19 01.18 | -27 50 24.8 |
| 6 28 04.39 | | 6 25 15.84 | 7 02 00.18 | 27 51 36.2 |
| | 7 10 20.83 | 7 08 23.21 | 7 16 08.96 | -27 53 53.5 |
| 7 23 07.05 | | 7 22 21.05 | 7 29 06.75 | 27 55 52.5 |
| | 8 07 15.39 | 8 05 06.88 | 8 12 17.84 | -27 57 38.1 |
| 8 19 12.58 | | 8 19 04.53 | 8 25 12.28 | 27 57 42.6 |
| | 9 04 08.43 | 9 01 14.23 | 9 09 02.56 | -27 55 35.5 |
| 9 16 15.40 | | 9 15 14.45 | 9 21 17.97 | 27 52 32.7 |
| | 10 01 20.08 | 9 28 20.69 | 10 06 09.74 | -27 46 03.7 |
| 10 15 01.41 | | 10 13 01.35 | 10 19 01.43 | 27 41 08.5 |
| | 10 28 22.29 | 10 26 02.22 | 11 02 15.18 | -27 33 31.4 |
| 11 12 13.40 | | 11 09 10.98 | 11 15 10.87 | 27 29 41.8 |
| | 11 25 03.84 | 11 22 07.62 | 11 29 20.11 | -27 25 21.5 |
| 12 10 22.66 | | 12 06 17.82 | 12 12 21.15 | 27 24 54.1 |
| | 12 22 19.49 | 12 19 14.11 | 12 27 02.20 | -27 25 14.3 |

YEAR = 1990

| M D H | M D H | M D H | M D H | ° ' " |
|---|---|---|---|---|
| | | 1 02 22.65 | | |
| 1 07 18.85 | | 1 15 22.26 | 1 09 06.36 | 27 27 13.6 |
| | 1 19 16.00 | 1 30 04.22 | 1 23 10.05 | -27 29 12.4 |
| 2 02 02.77 | | 2 12 07.20 | 2 05 13.47 | 27 30 06.7 |
| | 2 16 13.18 | 2 26 12.33 | 2 19 18.85 | -27 29 15.5 |
| 2 28 08.13 | | 3 11 15.29 | 3 04 18.93 | 27 26 38.3 |
| | 3 16 07.76 | 3 25 22.52 | 3 19 03.15 | -27 21 09.3 |
| 3 28 08.20 | | 4 07 21.60 | 4 01 00.90 | 27 15 52.5 |
| | 4 12 20.52 | 4 22 08.74 | 4 15 09.90 | -27 08 06.3 |
| 4 25 16.88 | | 5 05 02.63 | 4 28 08.70 | 27 03 09.6 |
| | 5 10 00.25 | 5 19 17.20 | 5 12 15.29 | -26 57 13.3 |
| 5 24 03.09 | | 6 01 07.90 | 5 25 18.21 | 26 55 08.0 |
| | 6 06 04.10 | 6 15 23.40 | 6 08 20.41 | -26 53 15.6 |
| 6 21 10.96 | | 6 28 14.74 | 6 22 04.25 | 26 54 08.0 |
| | 7 03 15.85 | 7 13 04.52 | 7 06 02.39 | -26 55 08.4 |
| 7 19 11.31 | | 7 25 23.30 | 7 19 13.25 | 26 56 36.1 |
| | 7 31 08.35 | 8 09 10.28 | 8 02 09.68 | -26 57 11.4 |
| 8 15 10.09 | | 8 22 08.54 | 8 15 20.30 | 26 56 17.5 |
| | 8 28 03.01 | 9 05 17.95 | 8 29 17.84 | -26 53 30.4 |
| 9 09 11.37 | | 9 18 16.88 | 9 12 01.88 | 26 49 06.8 |
| | 9 24 22.24 | 10 03 03.38 | 9 26 01.88 | -26 42 29.2 |
| 10 06 18.53 | | 10 15 23.27 | 10 09 07.53 | 26 36 14.3 |
| | 10 22 15.95 | 10 30 13.24 | 10 23 08.76 | -26 28 28.0 |
| 11 03 23.26 | | 11 12 04.11 | 11 05 15.15 | 26 23 38.5 |
| | 11 19 02.89 | 11 26 21.77 | 11 19 14.44 | -26 18 40.9 |
| 12 02 10.93 | | 12 09 09.27 | 12 03 01.20 | 26 17 33.9 |
| | 12 16 03.55 | 12 24 04.20 | 12 16 19.75 | -26 16 51.6 |
| 12 30 23.91 | | | 12 30 12.25 | 26 18 19.2 |

| PERIGEE | APOGEE | ZERO DEC. | EXTREME DEC. | APP. DEC. |
|---|---|---|---|---|
| YEAR = 1991 | | | | |
| M D H | M D H | M D H | M D H | ° ' '' |
| | | 1 05 16.82 | | |
| | 1 12 10.93 | 1 20 09.57 | 1 13 01.83 | -26 19 14.1 |
| 1 28 08.60 | | 2 02 02.79 | 1 26 22.01 | 26 19 19.6 |
| | 2 09 04.38 | 2 16 15.78 | 2 09 09.09 | -26 17 51.6 |
| 2 25 01.20 | | 3 01 13.17 | 2 23 05.13 | 26 13 46.9 |
| | 3 09 00.99 | 3 15 23.64 | 3 08 17.13 | -26 08 19.5 |
| 3 22 04.65 | | 3 28 21.70 | 3 22 10.54 | 26 01 12.8 |
| | 4 05 21.12 | 4 12 08.62 | 4 05 01.05 | -25 53 44.3 |
| 4 17 17.17 | | 4 25 03.66 | 4 18 16.31 | 25 47 14.7 |
| | 5 03 14.60 | 5 09 17.38 | 5 02 08.03 | -25 41 22.0 |
| 5 15 16.75 | | 5 22 08.32 | 5 16 00.19 | 25 38 18.6 |
| | 5 31 02.87 | 6 06 00.98 | 5 29 14.05 | -25 36 04.7 |
| 6 13 00.51 | | 6 18 13.91 | 6 12 09.98 | 25 36 21.6 |
| | 6 27 07.45 | 7 03 07.36 | 6 25 19.65 | -25 36 42.1 |
| 7 11 10.14 | | 7 15 21.86 | 7 09 20.37 | 25 37 32.4 |
| | 7 24 11.24 | 7 30 13.13 | 7 23 01.66 | -25 37 28.9 |
| 8 08 18.20 | | 8 12 07.84 | 8 06 05.67 | 25 35 33.2 |
| | 8 20 22.65 | 8 26 19.33 | 8 19 08.51 | -25 32 36.1 |
| 9 05 19.45 | | 9 08 18.17 | 9 02 12.89 | 25 26 37.8 |
| | 9 17 15.44 | 9 23 02.56 | 9 15 16.19 | -25 20 30.5 |
| 10 02 17.92 | | 10 06 02.92 | 9 29 18.20 | 25 12 26.2 |
| | 10 15 11.08 | 10 20 10.79 | 10 13 00.15 | -25 05 23.6 |
| 10 27 15.77 | | 11 02 09.12 | 10 26 23.76 | 24 59 00.2 |
| | 11 12 07.49 | 11 16 19.28 | 11 09 07.67 | -24 54 19.1 |
| 11 24 02.53 | | 11 29 13.79 | 11 23 07.46 | 24 52 07.1 |
| | 12 10 01.85 | 12 14 03.10 | 12 06 14.42 | -24 51 06.2 |
| 12 22 09.52 | | 12 26 19.68 | 12 20 17.82 | 24 51 50.8 |

| PERIGEE | APOGEE | ZERO DEC. | EXTREME DEC. | APP. DEC. |
|---|---|---|---|---|
| YEAR = 1992 | | | | |
| M D H | M D H | M D H | M D H | ° ' '' |
| | | | 1 02 20.48 | -24 52 15.3 |
| | 1 06 11.65 | 1 10 09.90 | 1 17 05.13 | 24 51 37.4 |
| 1 19 22.30 | | 1 23 04.64 | 1 30 02.54 | -24 49 54.9 |
| | 2 02 11.84 | 2 06 16.16 | 2 13 14.83 | 24 44 34.3 |
| 2 17 10.90 | | 2 19 15.86 | 2 26 09.38 | -24 39 25.2 |
| | 2 29 20.91 | 3 04 22.54 | 3 11 21.66 | 24 30 26.0 |
| 3 16 17.68 | | 3 18 02.78 | 3 24 17.25 | -24 23 38.6 |
| | 3 28 14.32 | 4 01 05.47 | 4 08 02.73 | 24 15 17.7 |
| 4 13 06.91 | | 4 14 11.23 | 4 21 01.66 | -24 09 59.2 |
| | 4 25 09.84 | 4 28 12.91 | 5 05 08.40 | 24 05 38.9 |
| 5 08 11.73 | | 5 11 17.07 | 5 18 09.72 | -24 03 34.0 |
| | 5 23 04.87 | 5 25 20.63 | 6 01 16.20 | 24 03 06.1 |
| 6 04 02.10 | | 6 07 21.99 | 6 14 16.84 | -24 03 13.8 |
| | 6 19 21.95 | 6 22 04.23 | 6 29 02.04 | 24 03 32.2 |
| 7 02 00.63 | | 7 05 04.32 | 7 11 23.14 | -24 03 09.4 |
| | 7 17 10.56 | 7 19 11.35 | 7 26 12.45 | 24 00 35.6 |
| 7 30 07.78 | | 8 01 13.11 | 8 08 05.11 | -23 57 34.2 |
| | 8 13 15.65 | 8 15 17.93 | 8 22 21.60 | 23 50 36.3 |
| 8 27 17.65 | | 8 28 23.78 | 9 04 11.67 | -23 44 54.4 |
| | 9 09 18.69 | 9 12 00.14 | 9 19 04.39 | 23 35 27.7 |
| 9 25 02.64 | | 9 25 10.52 | 10 01 19.33 | -23 29 09.7 |
| | 10 07 05.83 | 10 09 06.51 | 10 16 09.48 | 23 21 22.0 |
| 10 23 04.71 | | 10 22 19.36 | 10 29 04.11 | -23 17 13.0 |
| | 11 03 23.42 | 11 05 13.47 | 11 12 15.01 | 23 13 58.2 |
| 11 18 23.96 | | 11 19 01.58 | 11 25 13.15 | -23 13 01.8 |
| | 12 01 20.24 | 12 02 21.23 | 12 09 22.99 | 23 13 12.2 |
| 12 13 21.15 | | 12 16 06.74 | 12 22 21.28 | -23 13 25.8 |
| | 12 29 17.10 | 12 30 05.44 | | |

YEAR = 1993

| PERIGEE M D H | APOGEE M D H |
|---|---|
| 1 10 12.31 | |
| | 1 26 10.27 |
| 2 07 20.41 | |
| | 2 22 17.91 |
| 3 08 08.61 | |
| | 3 21 18.99 |
| 4 05 19.53 | |
| | 4 18 05.13 |
| 5 04 00.25 | |
| | 5 15 21.82 |
| 5 31 11.19 | |
| | 6 12 16.35 |
| 6 25 17.49 | |
| | 7 10 10.86 |
| 7 22 08.51 | |
| | 8 07 03.94 |
| 8 19 06.93 | |
| | 9 03 17.01 |
| 9 16 14.76 | |
| | 9 30 21.37 |
| 10 15 01.89 | |
| | 10 28 00.01 |
| 11 12 12.08 | |
| | 11 24 12.64 |
| 12 10 14.14 | |
| | 12 22 07.88 |

| ZERO DEC. M D H | EXTREME DEC. M D H | APP. DEC. ° ' " |
|---|---|---|
| | 1 06 09.36 | 23 12 35.4 |
| 1 12 13.50 | 1 19 03.97 | -23 10 42.6 |
| 1 26 13.33 | 2 02 20.16 | 23 05 07.9 |
| 2 08 23.21 | 2 15 09.91 | -23 00 00.7 |
| 2 22 20.32 | 3 02 05.06 | 22 50 18.7 |
| 3 08 10.62 | 3 14 16.54 | -22 43 50.6 |
| 3 22 02.37 | 3 29 11.37 | 22 34 25.6 |
| 4 04 21.34 | 4 11 00.82 | -22 29 32.5 |
| 4 18 08.22 | 4 25 16.37 | 22 24 19.9 |
| 5 02 05.70 | 5 08 10.28 | -22 22 30.7 |
| 5 15 14.80 | 5 22 22.23 | 22 21 37.7 |
| 5 29 11.79 | 6 04 19.71 | -22 21 46.8 |
| 6 11 22.54 | 6 19 06.03 | 22 22 02.2 |
| 6 25 17.36 | 7 02 04.04 | -22 21 29.4 |
| 7 09 07.03 | 7 16 15.58 | 22 19 09.0 |
| 7 23 00.18 | 7 29 10.84 | -22 15 54.3 |
| 8 05 15.26 | 8 13 01.41 | 22 09 15.9 |
| 8 19 09.23 | 8 25 16.67 | -22 03 30.8 |
| 9 01 22.41 | 9 09 09.90 | 21 54 10.3 |
| 9 15 19.84 | 9 21 23.01 | -21 48 05.1 |
| 9 29 04.40 | 10 06 16.29 | 21 40 02.3 |
| 10 13 06.43 | 10 19 07.11 | -21 36 11.7 |
| 10 26 09.98 | 11 02 21.52 | 21 32 37.7 |
| 11 09 15.29 | 11 15 17.17 | -21 31 52.4 |
| 11 22 16.50 | 11 30 03.55 | 21 32 04.4 |
| 12 06 21.96 | 12 13 03.86 | -21 32 21.2 |
| 12 20 00.75 | 12 27 11.73 | 21 32 07.1 |

YEAR = 1994

| PERIGEE M D H | APOGEE M D H |
|---|---|
| 1 06 01.22 | |
| | 1 19 05.25 |
| 1 31 03.80 | |
| | 2 16 01.58 |
| 2 27 22.26 | |
| | 3 15 17.20 |
| 3 28 06.25 | |
| | 4 11 23.77 |
| 4 25 17.30 | |
| | 5 09 02.32 |
| 5 24 02.99 | |
| | 6 05 12.68 |
| 6 21 06.73 | |
| | 7 03 04.72 |
| 7 18 17.48 | |
| | 7 30 23.00 |
| 8 12 23.21 | |
| | 8 27 17.86 |
| 9 08 14.50 | |
| | 9 24 12.05 |
| 10 06 14.21 | |
| | 10 22 01.79 |
| 11 03 23.77 | |
| | 11 18 05.12 |
| 12 02 12.40 | |
| | 12 15 07.84 |
| 12 30 23.13 | |

| ZERO DEC. M D H | EXTREME DEC. M D H | APP. DEC. ° ' " |
|---|---|---|
| 1 03 03.86 | | |
| 1 16 10.23 | 1 09 13.19 | -21 30 07.2 |
| 1 30 11.13 | 1 23 21.55 | 21 25 37.7 |
| 2 12 19.31 | 2 05 20.14 | -21 20 11.6 |
| 2 26 20.69 | 2 20 07.25 | 21 11 32.7 |
| 3 12 02.65 | 3 05 01.84 | -21 04 47.9 |
| 3 26 07.46 | 3 19 15.28 | 20 55 55.3 |
| 4 08 08.34 | 4 01 08.41 | -20 51 01.4 |
| 4 22 17.68 | 4 15 21.48 | 20 45 59.1 |
| 5 05 13.75 | 4 28 17.22 | -20 44 22.1 |
| 5 20 02.14 | 5 13 03.07 | 20 43 44.6 |
| 6 01 20.51 | 5 26 03.81 | -20 44 07.5 |
| 6 16 08.92 | 6 09 09.45 | 20 44 59.3 |
| 6 29 05.12 | 6 22 14.52 | -20 44 31.4 |
| 7 13 15.09 | 7 06 17.23 | 20 43 15.0 |
| 7 26 14.77 | 7 19 23.73 | -20 39 49.4 |
| 8 09 22.05 | 8 03 02.11 | 20 34 42.0 |
| 8 22 23.97 | 8 16 06.69 | -20 28 35.1 |
| 9 06 06.66 | 8 30 11.01 | 20 20 51.1 |
| 9 19 07.61 | 9 12 12.33 | -20 14 30.3 |
| 10 03 16.66 | 9 26 18.89 | 20 07 37.0 |
| 10 16 13.53 | 10 09 18.52 | -20 03 48.8 |
| 10 31 02.93 | 10 24 01.55 | 20 00 52.8 |
| 11 12 19.05 | 11 06 03.30 | -20 00 25.8 |
| 11 27 12.04 | 11 20 07.72 | 20 01 16.4 |
| 12 10 02.04 | 12 03 14.64 | -20 02 00.3 |
| 12 24 19.45 | 12 17 14.59 | 20 02 57.9 |
| | 12 31 02.55 | -20 01 17.2 |

YEAR = 1995

| PERIGEE (M D H) | APOGEE (M D H) | ZERO DEC. (M D H) | EXTREME DEC. (M D H) | APP. DEC. (° ' '') |
|---|---|---|---|---|
| | | 1 06 11.43 | | |
| | 1 11 22.12 | 1 21 01.95 | 1 13 22.66 | 19 58 40.2 |
| 1 27 23.44 | | 2 02 22.15 | 1 27 12.48 | -19 53 05.3 |
| | 2 08 18.05 | 2 17 09.16 | 2 10 07.46 | 19 46 37.4 |
| 2 23 02.15 | | 3 02 08.04 | 2 23 19.34 | -19 39 24.7 |
| | 3 08 15.03 | 3 16 17.90 | 3 09 16.09 | 19 32 21.2 |
| 3 20 13.27 | | 3 29 15.70 | 3 23 00.80 | -19 27 13.9 |
| | 4 05 10.20 | 4 13 03.73 | 4 05 23.91 | 19 23 20.3 |
| 4 17 08.36 | | 4 25 21.52 | 4 19 07.42 | -19 22 00.7 |
| | 5 03 00.78 | 5 10 13.58 | 5 03 06.93 | 19 22 12.6 |
| 5 15 15.37 | | 5 23 03.27 | 5 16 16.74 | -19 23 14.4 |
| | 5 30 07.70 | 6 06 22.44 | 5 30 13.70 | 19 25 05.9 |
| 6 13 01.22 | | 6 19 10.65 | 6 13 04.07 | -19 25 19.3 |
| | 6 26 10.84 | 7 04 05.93 | 6 26 20.67 | 19 25 28.4 |
| 7 11 10.08 | | 7 16 20.09 | 7 10 15.50 | -19 22 28.4 |
| | 7 23 20.29 | 7 31 12.44 | 7 24 04.16 | 19 19 15.5 |
| 8 08 13.94 | | 8 13 06.57 | 8 07 01.16 | -19 13 10.0 |
| | 8 20 11.78 | 8 27 19.13 | 8 20 12.13 | 19 07 36.0 |
| 9 05 01.29 | | 9 09 16.53 | 9 03 08.14 | -19 01 06.9 |
| | 9 17 06.28 | 9 24 02.95 | 9 16 20.27 | 18 56 05.8 |
| 9 30 03.68 | | 10 07 00.71 | 9 30 13.55 | -18 52 26.8 |
| | 10 15 02.10 | 10 21 12.24 | 10 14 04.33 | 18 50 44.1 |
| 10 26 21.13 | | 11 03 07.12 | 10 27 19.88 | -18 50 59.1 |
| | 11 11 21.04 | 11 17 22.34 | 11 10 12.21 | 18 52 45.9 |
| 11 23 23.12 | | 11 30 13.13 | 11 24 05.21 | -18 54 39.7 |
| | 12 09 10.24 | 12 15 07.88 | 12 07 19.86 | 18 56 56.5 |
| 12 22 10.22 | | 12 27 20.83 | 12 21 17.28 | -18 56 33.2 |

YEAR = 1996

| PERIGEE (M D H) | APOGEE (M D H) | ZERO DEC. (M D H) | EXTREME DEC. (M D H) | APP. DEC. (° ' '') |
|---|---|---|---|---|
| | | | 1 04 03.39 | 18 55 51.0 |
| | 1 05 11.48 | 1 11 15.87 | 1 18 05.61 | -18 51 07.5 |
| 1 19 23.18 | | 1 24 06.96 | 1 31 10.88 | 18 46 53.8 |
| | 2 01 15.77 | 2 07 22.57 | 2 14 15.53 | -18 39 54.6 |
| 2 17 08.76 | | 2 20 18.27 | 2 27 18.58 | 18 34 54.6 |
| | 2 29 07.18 | 3 06 05.28 | 3 12 22.23 | -18 29 57.7 |
| 3 16 05.77 | | 3 19 04.66 | 3 26 02.74 | 18 27 32.8 |
| | 3 28 02.72 | 4 02 13.04 | 4 09 03.62 | -18 26 59.2 |
| 4 11 02.79 | | 4 15 12.86 | 4 22 11.27 | 18 28 12.2 |
| | 4 24 22.46 | 4 29 22.13 | 5 06 10.49 | -18 30 36.8 |
| 5 06 21.81 | | 5 12 19.35 | 5 19 19.75 | 18 33 30.4 |
| | 5 22 16.31 | 5 27 07.84 | 6 02 20.00 | -18 35 22.3 |
| 6 03 16.34 | | 6 09 01.64 | 6 16 03.74 | 18 36 52.7 |
| | 6 19 06.41 | 6 23 17.06 | 6 30 07.44 | -18 35 23.8 |
| 7 01 22.25 | | 7 06 09.35 | 7 13 11.05 | 18 33 52.1 |
| | 7 16 13.50 | 7 21 00.93 | 7 27 18.88 | -18 28 53.5 |
| 7 30 07.64 | | 8 02 18.94 | 8 09 17.90 | 18 25 10.9 |
| | 8 12 16.55 | 8 17 07.52 | 8 24 04.45 | -18 19 24.5 |
| 8 27 16.92 | | 8 30 05.71 | 9 06 00.97 | 18 16 06.1 |
| | 9 09 01.79 | 9 13 13.70 | 9 20 11.38 | -18 13 12.9 |
| 9 24 21.78 | | 9 26 16.25 | 10 03 08.89 | 18 12 44.5 |
| | 10 06 17.95 | 10 10 20.84 | 10 17 16.84 | -18 14 20.8 |
| 10 22 08.78 | | 10 24 01.27 | 10 30 17.92 | 18 17 02.0 |
| | 11 03 13.67 | 11 07 05.63 | 11 13 23.55 | -18 20 59.1 |
| 11 16 04.79 | | 11 20 08.51 | 11 27 03.53 | 18 24 24.1 |
| | 12 01 10.53 | 12 04 15.60 | 12 11 09.19 | -18 26 26.5 |
| 12 13 04.33 | | 12 17 15.06 | 12 24 12.53 | 18 27 20.0 |
| | 12 29 05.42 | | | |

| PERIGEE | APOGEE | ZERO DEC. | EXTREME DEC. | APP. DEC. |
|---|---|---|---|---|
| | | YEAR = 1997 | | |
| M D H | M D H | M D H | M D H | ° ' '' |
| | | 1 01 01.30 | 1 07 21.14 | -18 24 49.5 |
| 1 10 08.92 | | 1 13 22.87 | 1 20 20.13 | 18 22 21.8 |
| | 1 25 16.75 | 1 28 09.49 | 2 04 08.93 | -18 16 52.8 |
| 2 07 20.73 | | 2 10 08.88 | 2 17 02.70 | 18 13 29.4 |
| | 2 21 17.15 | 2 24 16.11 | 3 03 18.21 | -18 09 34.3 |
| 3 08 09.09 | | 3 09 20.16 | 3 16 09.58 | 18 08 24.9 |
| | 3 20 23.72 | 3 23 22.29 | 3 31 00.82 | -18 09 13.2 |
| 4 05 16.83 | | 4 06 06.93 | 4 12 17.90 | 18 11 22.2 |
| | 4 17 15.49 | 4 20 05.42 | 4 27 06.51 | -18 15 51.1 |
| 5 03 11.30 | | 5 03 15.92 | 5 10 03.60 | 18 19 38.9 |
| | 5 15 10.23 | 5 17 13.99 | 5 24 13.63 | -18 24 00.6 |
| 5 29 06.97 | | 5 30 23.12 | 6 06 13.51 | 18 26 37.5 |
| | 6 12 05.11 | 6 13 23.49 | 6 20 22.94 | -18 27 38.7 |
| 6 24 05.02 | | 6 27 05.70 | 7 03 22.34 | 18 27 24.7 |
| | 7 09 22.89 | 7 11 08.73 | 7 18 09.76 | -18 24 37.1 |
| 7 21 23.09 | | 7 24 13.05 | 7 31 05.51 | 18 22 14.5 |
| | 8 06 13.56 | 8 07 16.68 | 8 14 20.47 | -18 18 09.0 |
| 8 19 05.08 | | 8 20 22.16 | 8 27 11.60 | 18 16 04.6 |
| | 9 02 21.27 | 9 03 23.16 | 9 11 05.50 | -18 14 33.8 |
| 9 16 15.45 | | 9 17 08.82 | 9 23 17.97 | 18 15 05.4 |
| | 9 29 23.56 | 10 01 05.13 | 10 08 12.41 | -18 18 22.7 |
| 10 15 02.13 | | 10 14 19.89 | 10 21 02.24 | 18 21 51.5 |
| | 10 27 09.10 | 10 28 11.89 | 11 04 18.30 | -18 28 14.9 |
| 11 12 07.94 | | 11 11 05.84 | 11 17 12.62 | 18 32 34.5 |
| | 11 24 02.50 | 11 24 20.32 | 12 02 01.39 | -18 37 37.5 |
| 12 09 16.88 | | 12 08 13.74 | 12 14 23.69 | 18 39 44.8 |
| | 12 21 23.44 | 12 22 05.98 | 12 29 10.73 | -18 40 13.9 |
| | | YEAR = 1998 | | |
| M D H | M D H | M D H | M D H | ° ' '' |
| 1 03 08.67 | | 1 04 20.36 | 1 11 09.36 | 18 39 04.4 |
| | 1 18 20.63 | 1 18 15.50 | 1 25 21.60 | -18 35 58.5 |
| 1 30 14.24 | | 2 01 03.61 | 2 07 16.52 | 18 33 42.4 |
| | 2 15 14.74 | 2 14 23.64 | 2 22 08.04 | -18 31 24.8 |
| 2 27 19.99 | | 2 28 12.88 | 3 06 22.22 | 18 31 13.8 |
| | 3 15 00.58 | 3 14 06.29 | 3 21 16.58 | -18 33 29.0 |
| 3 28 07.13 | | 3 27 23.81 | 4 03 04.73 | 18 36 31.4 |
| | 4 11 01.85 | 4 10 12.38 | 4 17 23.32 | -18 42 58.0 |
| 4 25 17.88 | | 4 24 10.86 | 4 30 13.61 | 18 47 38.1 |
| | 5 08 09.06 | 5 07 19.22 | 5 15 05.55 | -18 54 29.9 |
| 5 24 00.07 | | 5 21 20.49 | 5 28 00.32 | 18 58 03.5 |
| | 6 04 23.81 | 6 04 03.35 | 6 11 12.74 | -19 01 42.6 |
| 6 20 17.37 | | 6 18 04.11 | 6 24 11.10 | 19 02 28.0 |
| | 7 02 17.53 | 7 01 12.39 | 7 08 21.30 | -19 02 05.3 |
| 7 16 13.86 | | 7 15 10.43 | 7 21 20.23 | 19 00 39.3 |
| | 7 30 12.22 | 7 28 21.38 | 8 05 06.80 | -18 58 30.9 |
| 8 11 11.84 | | 8 11 17.07 | 8 18 03.08 | 18 57 20.2 |
| | 8 27 06.43 | 8 25 05.36 | 9 01 16.27 | -18 57 13.0 |
| 9 08 06.03 | | 9 08 01.39 | 9 14 08.50 | 18 58 38.4 |
| | 9 23 21.89 | 9 21 12.10 | 9 29 00.69 | -19 03 07.1 |
| 10 06 13.13 | | 10 05 11.80 | 10 11 14.71 | 19 07 29.6 |
| | 10 21 05.27 | 10 18 18.32 | 10 26 07.76 | -19 15 33.0 |
| 11 04 00.75 | | 11 01 23.23 | 11 07 23.58 | 19 20 48.9 |
| | 11 17 06.49 | 11 15 01.00 | 11 22 14.30 | -19 28 13.7 |
| 12 02 12.40 | | 11 29 09.70 | 12 05 11.03 | 19 31 24.3 |
| | 12 14 17.12 | 12 12 08.97 | 12 19 21.47 | -19 34 29.0 |
| 12 30 17.79 | | 12 26 17.73 | | |

YEAR = 1999

| PERIGEE | APOGEE | ZERO DEC. | EXTREME DEC. | APP. DEC. |
|---|---|---|---|---|
| M D H | M D H | M D H | M D H | ° ' " |
| | | 1 08 18.08 | 1 01 22.87 | 19 34 20.4 |
| | 1 11 11.75 | 1 22 23.79 | 1 16 05.80 | -19 33 26.1 |
| 1 26 21.41 | | 2 05 03.36 | 1 29 08.52 | 19 32 00.0 |
| | 2 08 08.84 | 2 19 06.22 | 2 12 14.93 | -19 31 08.1 |
| 2 20 14.65 | | 3 04 11.75 | 2 25 15.13 | 19 31 49.7 |
| | 3 08 05.13 | 3 18 14.73 | 3 11 23.81 | -19 34 54.4 |
| 3 20 00.35 | | 3 31 18.92 | 3 24 20.35 | 19 39 02.8 |
| | 4 04 21.50 | 4 15 01.25 | 4 08 07.82 | -19 46 21.4 |
| 4 17 05.47 | | 4 28 01.33 | 4 21 02.97 | 19 52 11.5 |
| | 5 02 06.25 | 5 12 12.23 | 5 05 14.98 | -20 00 24.2 |
| 5 15 15.20 | | 5 25 07.97 | 5 18 12.30 | 20 05 00.8 |
| | 5 29 08.34 | 6 08 21.91 | 6 01 21.76 | -20 10 21.4 |
| 6 13 00.69 | | 6 21 15.50 | 6 14 23.45 | 20 11 59.2 |
| | 6 25 15.58 | 7 06 05.35 | 6 29 04.66 | -20 13 17.2 |
| 7 11 06.13 | | 7 18 23.95 | 7 12 10.45 | 20 12 34.2 |
| | 7 23 05.74 | 8 02 11.09 | 7 26 12.06 | -20 11 48.0 |
| 8 07 23.60 | | 8 15 08.80 | 8 08 19.49 | 20 11 20.3 |
| | 8 19 23.47 | 8 29 16.96 | 8 22 19.96 | -20 12 01.0 |
| 9 02 18.10 | | 9 11 17.26 | 9 05 02.05 | 20 14 23.5 |
| | 9 16 18.66 | 9 26 00.70 | 9 19 04.13 | -20 19 04.7 |
| 9 28 16.75 | | 10 09 00.84 | 10 02 07.23 | 20 24 41.2 |
| | 10 14 13.87 | 10 23 10.88 | 10 16 12.19 | -20 32 53.1 |
| 10 26 13.05 | | 11 05 07.59 | 10 29 13.65 | 20 39 27.3 |
| | 11 11 05.51 | 11 19 22.19 | 11 12 19.79 | -20 47 35.6 |
| 11 23 22.02 | | 12 02 14.11 | 11 25 23.02 | 20 51 56.2 |
| | 12 08 11.02 | 12 17 08.31 | 12 10 02.89 | -20 56 17.3 |
| 12 22 10.98 | | 12 29 21.39 | 12 23 10.83 | 20 57 02.3 |